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Shop Equipment Review

Semi-Annual Resumé of machinery, tools, mechanisms, parts and materials described in the Shop Equipment News sections of the American Machinist during the first six months of 1931, and also a similar resumé of the Engineering Workshop Equipment sections of the European Edition for December, 1930, to May, 1931, inclusive

WITH a grand total of 575 items, this semi-annual review is but 25 items short of the record set by the January 15, 1931, issue. It reflects the spirit of the industry in the face of adverse conditions. Granted that more time has been available during the last six months for research and design, it is obvious that courage—as well as necessity—has prompted a large measure of redesign and improvement in machine tools and accessory equipment.

Designers generally are making far more extensive use than ever before of the great variety of materials, parts and mechanisms now on the market in profusion. Alloy cast irons, many classes of alloy steels, non-ferrous light metals for lower inertia effects, ball and roller bearings, heat-treated and ground gears, force-feed lubricators, oil filters, hydraulic mechanisms, air-operated chucks, electric motor drives of each machine function, interlocking electrical controls, centralized mechanical controls, and higher standards of accuracy in manufacture are now so common as to be no longer wondered at. With so much to work with, designers in every line are rendering existing equipment obsolete at a rate greater than ever before, and in addition, are forcing the owners of out-of-date equipment toward involuntary economic suicide.

As would be expected, most of the production-type machine tools feature hydraulic feeds. Whereas the last review listed eighteen such equipments, the present number contains twenty-one. These are as follows: a double-end boring machine for large pipe couplings; a hole-finishing machine; an upright drilling machine; a gear roughing machine; a gear grinder; a gear burnishing machine; a plain grinder; an internal grinder; two surface grinders, a honing machine; an automatic lathe; an angle-wheelhead grinder; an hydraulic press; a spot welder; a bandsaw; a brake; a die-casting machine; a marking machine; and two sawing machines.

Fewer manufacturers have offered machines for the use of tungsten and tantulum carbide than during the preceding six months, a large, heavy production milling machine being the outstanding new contribution. Another manufacturer adds a new size of automatic lathe to its line, and still another concern is building a boring bar for reboring cylinder blocks. Accurate finishing of holes with diamond or carbide tools is the function of a duplex, horizontal machine, while a bench lathe has been speeded up to 4,600 r.p.m. It is probably true that tungsten carbide is finding most application in mass production operations for which special machines are being designed or heavy-duty machines are being equipped with larger motors.

Another significant trend is that of wider application of electrical drives and controls, and also of electrical gaging. Wherever possible, designers are using motors to perform each function of a machine, instead of using complicated gearing with the attendant castings, shafting, bearings, and the additional problems of lubrication, vibration and machining to solve. Various electrical gaging devices are used directly on machines to control tolerances, this being particularly true of grinding machines. Electrical comparators involve new applications of the Wheatstone bridge circuit and give such a large range of magnification as to permit easy separation of parts on a 0.0001-in. basis for selective assembly.

Other trends in machine construction are illustrated throughout these pages. Among the boring machines is a jig-boring type which does not require calculations on the part of the operator, and which feeds by electrical means to tolerances of 0.0002 in. One chucking machine can be converted into a bar machine by the addition of a few extra parts.

Drilling machines show several improvements. Vertical driving motors coupled to the spindles and controlled entirely by electrical means are used in one design. Another machine employs a head incorporating a cylinder for hydraulic feed, instead of having the cylinder on a stationary part of the machine. Either round or box-column construction can be obtained on a line of upright drills, which may be equipped for either single- or general-purpose work. Contrary to general practice another upright drilling machine feeds the table upward to the drill by means of a pedal.

Grinding spur and helical gears after hardening at a cost no greater than finish cutting is the feature of a 10-in. hydraulic gear grinder. Sizing equipment for internal grinders, as offered by two manufacturers, uses electrical means for control. Shoulders, including fillets, are ground automatically on an angle-wheelhead grinder.

Among the surface grinders is a two-head model for roughing and finishing independently to close limits, and another vertical model which permits feeding the wheelhead by hand to determine the correct "feel" of the highest efficient rate of feed. Mechanical scraping of long bores is made possible in the honing machine by means of a toolhead having a series of round-nosed blades set in soft metal in individual holders.

Lathes do not present any startling developments. Another automatic hydraulic model has been introduced. Bench lathes have been refined as to electrical control. A ball-turning lathe is now fitted with a speed-adjusting rheostat to maintain uniform cutting speed over the surface of the sphere. One screw machine is now made longer in the spindle carrier to achieve additional surface for mounting combination tools. An electrical manufacturer offers an electrical control for screw machines whereby all movements are made electrically rather than by mechanical means.

Of the new milling machines offered during the last six months several show improvements. One design is applicable to both short-run and production jobs. Another duplex type is designed for tungsten- and tantalum-carbide milling cutters, the highest spindle speed being 1,000 r.p.m. and the highest feed 100 in. per min. Spindles of this machine can be laced together for greater rigidity.

Anti-friction bearings continue to be featured by press builders. Some builders are now casting the main columns and backgear brackets integrally in order to achieve greater rigidity. Coining or finishing parts to size accurately, hot, semi-hot or cold, can be done on one high-speed finishing or forging press, eliminating machining of forgings to a great extent.

In addition to improved machine equipment, this review also contains many condensed descriptions of materials, parts and mechanisms of interest to machinery designers.

The review of European equipment is larger than usual, containing 158 items, many of which were exhibited at the Leipzig Fair. Many production machines are now offered by both German and English manufacturers. Automatic and multi-tool lathes, drilling machines of unit construction, production-type grinders and gear-cutting machines of large capacity and productivity are reviewed.

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Boring and Turning Machines

Boring Machine, Horizontal, No. 50

Universal Boring Machine Co., Hudson, Mass. [Vol.74, p.261.] 84.

A box bed having four ways is employed in the No. 50 horizontal boring machine. Two-thirds of the table is supported by the carriage at the extreme forward and rear positions. Controls for the table and carriage have been concentrated in a single bracket. A Bowen "One-Shot" oiling system is supplied.

The main boring bar is 5 in. in diameter, with a No. 7 Morse taper. Spindle drive gears are of heat-treated alloy steel, the high-speed drive to the spindle being through herringbone gears. Spiral-bevel gears are used in the head assembly. The spindle sleeve is mounted on large Timken roller bearings to permit a maximum spindle speed of 400 r.p.m.

Machines are built with beds to take up to 168 in. between the faceplate and the outer support; tables up to 60 x 144 in., 120 in. of power cross feed, and vertical travels up to 84 in.

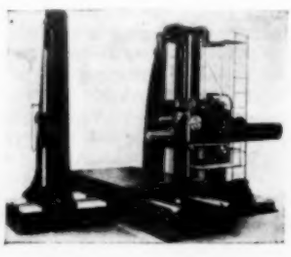
Boring, Drilling and Milling Machines, Horizontal, Two-Spindle, No. 70

Giddings & Lewis Machine Tool Co., Fond du Lac, Wis. [Vol.74,p.881.] 368.

On the table-type, planer-type and floor-type machines, the same head, column, column-base mechanism end supports are used. For the table-type and planer-type machines, the end support block moves in unison with the head. On the planer-type, the head, column and column-base mechanism are movable along a runway at right angles to the table travel.

The 7-in. main spindle gives 36 speeds in fine geometrical progression. The 4-in. auxiliary high-speed spindle is mounted within the back-gear shaft of the main spindle and gives an additional 36 speeds. Combined speed range is 3 to 720 r.p.m.

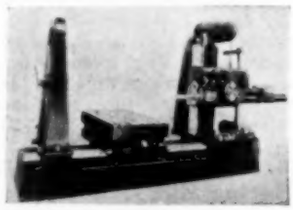
The eighteen feeds to either spindle are obtainable through a removable feed unit. Main-spindle feeds range from 0.005 in. to 0.250 in. per revolution and the auxiliary-spindle feeds, 0.002 in. to 0.125 in. An automatic depth gage is applicable to either spindle. Rapid traverse is at 120 in. per min. Vertical adjustment of the head is up to 144 in. Tables range up to 72 x 144 in.



Boring, Drilling and Milling Machines, Two-Spindle, Horizontal, No. 30

Giddings & Lewis Machine Tool Co., Fond du Lac, Wis. [Vol.74,p.918.] 398.

Constructional features of the No. 70 machine (previous item) have been largely carried over into the design of the smaller No. 30 machine. The No. 30 employs a 3-in. main spindle and makes use of a high-speed auxiliary spindle, which is 2 in. in diameter. Speeds for the main spindle range from 8.3 to 500 r.p.m. in 36 geometrical steps, and for the high-speed spindle from 25 to 1,500 r.p.m. in 36 steps.



Like the No. 70 machine, the No. 30 can be furnished in the table-, planer- and floor types, using the same principal units. Vertical adjustment of the head on the column is up to 48 in. on all types. Tables range up to 36x72 in.

Range of feeds to main spindle, 0.007 to 0.375 in.; range of feeds to auxiliary spindle, 0.002 to 0.125 in.; range of milling feeds, 0.8 to 40 in.; power required, 15 hp., and rapid traverse to all units, 120 in. per min.

Boring Machine, Jig, "Kellocater"

Keller Mechanical Engineering Corporation, 70 Washington St., Brooklyn, N. Y. [Vol.74, p.628.] 234.

One vernier scale measures the longitudinal movement and the other the transverse movement. The operator need not add or subtract decimals or fractions in determining successive locations. Snapping a toggle switch moves the table at uniform speed by means of a lead-screw driven by a magnetic clutch. As the contact stop fastened to the table touches the anvil of the vernier slider, the magnetic clutch releases the leadscrew and the table stops at location within a tolerance of 0.0002 in. By using the automatic reversible spindle feed, the operator is free to make the next setting.

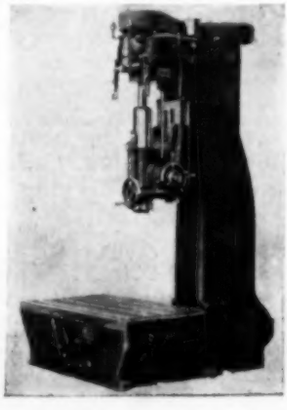
Eight spindle speeds are obtainable—77 to 1,750 r.p.m. Two reversible automatic feeds —0.002 in. and 0.005 in.—are available.

Specifications: table travel, horizontal, 18 in., transverse, 12 in.; table working surface, 14x 21 in.; distance from table to spindle end, 2½ in. minimum, 14½ in. maximum; distance from spindle center to face of column, 14 in.; vertical adjustment of spindle bracket, 6 in.; spindle quill travel, 6 in.

Boring Machine, Jig, Special, No. 5

Reed-Prentice Corporation, Worcester, Mass. [Vol.74,p. 704.] 252.

This special No. 5 jig boring machine is especially adapted for boring the top and bottom sections of cast-iron sub-presses for electrical-lamination blanking and piercing operations.



Specifications: 18 spindle speeds from 25 to 900 r.p.m. power feed to spindle, 15 in.; feeds, 0.005, 0.010 and 0.020 in.; spindle taper, No. 5 Morse; throat depth, 20 in.; maximum distance from spindle to table, 39 in.; and solid-box table, 36x 70 in., offset as shown.

Die-Making Machines, Automatic

Keller Mechanical Engineering Corporation, 70 Washington St., Brooklyn, N. Y. [Vol.74, p.221.] 70.

The Types G-1210 and GG-1210 machines employ the same principles of operation as used on the larger Type BL (*A.M.*—page 489, Vol. 63). The second machine is supplied with a built-in jig-boring spindle. Spindle speeds range from 225 to 3,500 r.p.m., and to 10,000 r.p.m. with the Keller high-speed spindle. Both machines are sensitive enough to use mills as small as 0.044 in.

The cutter spindle is guided by an electrical control from the tracer following a templet. In addition to automatic control, the vertical and horizontal motions can be operated by hand. Transverse movement of the work table is operated by handwheel. In the Type GG machine there is a power transverse feed for jig boring, together with built-in vernier scales, magnifier and reading lights.

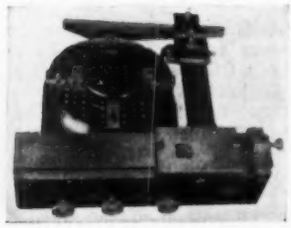
Specifications of the Type G-1210 machine (without jig-boring feature) are: horizontal travel, 12 in.; vertical travel, 10 in.; transverse adjustment, 8 in.; table working surface, 18x 18 in.; distance from work-table to spindle center, 0 to 10 in.

Layout Table, Precision

Moore Special Tool Co., Inc., 538 John St., Bridgeport, Conn. [Vol.74,p.226.] 63.

Accurate spacing and drilling of holes in such parts as masterplates, templets, and flat jigs can be done on this precision lay-out and drilling table to limits of plus or minus 0.00025 in. The equipment has capacity for rectangular work 1 in. thick x 8 in. wide x 10 in. long, and round plates up to 8 in.

The table consists of a drill bushing mounted on a slide, which is graduated in 40ths of

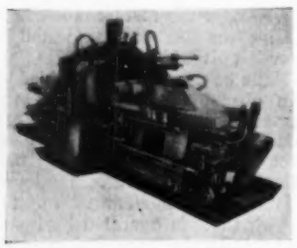


an inch, the slide carrying a vernier plate. This small slide is mounted on a larger slide graduated in the same manner. Readings are made for the distance of travel of the slides as on a vernier height gage or caliper. The work-holding table is an 8-in. disk and can be turned and set at 90-deg. positions or at any angle read to one minute of arc.

Boring Machine, Double-End, Center-Drive

William K. Stamets, Jenkins Arcade Bldg., Pittsburgh, Pa. [Vol.74,p.71.] 1.

Boring and facing pipe couplings and similar tapped and straight bored work can be done on this double-end boring machine. A chuck housing is mounted in the center of the bed with a boring carriage on each side. Each carriage is actuated by a separate oilgear



pump and cylinder, providing automatic rapid traverse and two rates of feed. Each carriage is also provided with a delayed reverse, which provides a dwell at the end of the stroke for facing.

The power chuck is opened or closed while the spindle is running by means of push buttons. Chucking pressure is adjustable. A 30-hp., adjustable-speed motor provides spindle drive through helical gears. A pneumatic loading arm and unloading arm are provided.

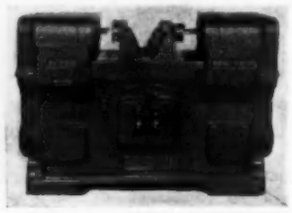
Boring Machine, Horizontal, Precision, "Bore-Matic"

Heald Machine Co., Worcester, Mass. [Vol.74,p.696.] 277.

For the employment of diamond and tungsten-carbide tools the "Bore-Matic" will rough or finish bore straight, taper, blind and interrupted holes in bronze, aluminum, fiber, Bakelite and soft cast iron. Hydraulic operation and massive construction permit tolerances of ten-thousandths, for size, taper and roundness.

The table pad, which is 16 in. wide by 26 in. long, has three T-slots for clamping the fixtures. The boring-head bridges have buttons to serve as locating points for lining up the boring heads. Drive is from one 7½-hp. motor. Only one "hand" of tool is necessary in both heads.

Specifications: maximum

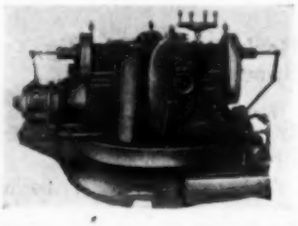


diameter of hole bored, 5 in.; minimum, $\frac{7}{16}$ in.; length of hole bored, 7 in.; distance, top of table to center line of std. boring spindles, 7 in.; minimum center distance between spindles, 5 in.; maximum, 15 in.; boring head speeds, 1,200 to 5,000 r.p.m.; table feeds, ½ to 15 in. per min.; travel of table, 15 in.; floor space, 19 sq.ft.; net weight, 7,000 lb.

Drilling and Turning Machines, Four-Way, Nos. 1 and 2

Reed-Prentice Corporation, Worcester, Mass. [Vol.74,p.372.] 149.

Drilling four holes, or turning four diameters, or milling four surfaces can be done simultaneously on this 4-way machine. The unit is particularly applicable to automotive production. It consists of four

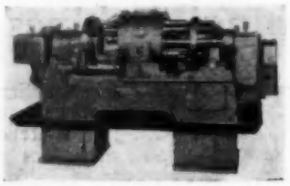


heads mounted on the table forming the top of the bed. Each head contains a spindle driven through helical gears from four spindle drive shafts and a cluster of bevel gears inside the bed. Belt drive is furnished. The spindles are free to move back and forth in the heads.

Boring, Reaming, Facing and Turning Machine, Automatic

Ekstrom, Carlson & Co., 1439 Railroad Ave., Rockford, Ill. [Vol.74,p.885.] 367.

This eight-station production machine always has seven stations in continuous operation, loading being done at the first

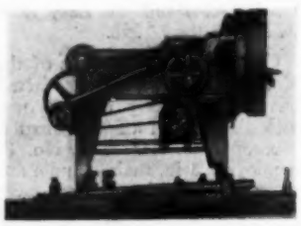


station. By means of cams the indexing of the workhead is performed automatically. Five cycle speeds of 2, 2½, 3, 3½ and 4 cycles per min. are provided. Spindles are hardened and ground and run in long bronze bearings.

Reboring Machine, Brake Drum and Cylinder

Marvel Machine Tool Co., 3518 St. Paul Ave., Minneapolis, Minn. [Vol.74,p.851] 360.

For reboring cylinders and machining brake drums, this unit employs a fly cutter. It



will handle any type of cylinder from a blind motorcycle cylinder to an 8-cylinder block and up to a 9-in. bore having a depth of 18 in. A ¾-hp. motor is provided, together with a 2 15/16-in. boring bar. Reversible feed is from 0 to 1/16 in.

Boring Mill, Semi-Automatic, for Wire Wheels

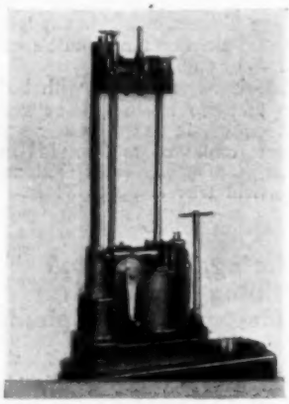
Ex-Cell-O Aircraft & Tool Corporation, 1200 Oakman Blvd., Detroit, Mich. [Vol.74, p.379.] 148.

This semi-automatic machine is built for boring and turning two diameters, forming two peripheries, and facing the hub face of wire wheels. The wheel is placed on a rotating table and centered by a shouldered pilot in the upper vertical unit. This unit is rapid traversed downward by means of a large handwheel to an indicated stop and locked. The cross-slide finishes the hub face and forms a radius on the periphery of the hub flange. Simultaneously, the lower vertical unit bores the opposite end of the hub with a circular form tool. A roller follows the run-out of the hub, and keeps the chamfering tool true with the lower face of the hub.

Boring Bar for Cylinder Blocks, "Perfecto"

Van Norman Machine Tool Co., Automotive Division, Springfield, Mass. [Vol.74,p. 959.] 407.

For reboring cylinder blocks, the "Perfecto" boring bar features a single fly cutter tipped with tungsten carbide. It revolves at 250 r.p.m. The feeding rate is at 1¾ in. per min., regardless of the diameter. The cutting tool is mounted on a bar which revolves inside of another non-revolving bar. About ½ in.



back of the cutting tool are four non-revolving expanding and contracting supports, which provide rigid support for the cutting tool throughout the length of the bore. The range of the bar is for bores from 2¾ to 4½ in.

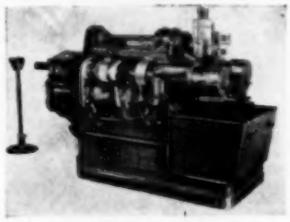
Chucking Machine, Automatic, 5-In.

New Britain-Gridley Machine Co., New Britain, Conn. [Vol.74,p.556.] 175.

An adaptation of the No. 38 single-spindle automatic chucking machine converts it into a bar machine for stock up to 5 in. in diameter. Aside from the hollow spindle required on the bar machine, the extra-bar-feeding mechanism and a few minor parts, the two types of machine have interchangeable parts. A pair of heavy shafts act as tool slides, one on each side of the

spindle. A pair of camshafts give the tool slides the required longitudinal and oscillating movements.

Power is transmitted by silent chain from the 10-hp. flanged motor. A Tuthill oil pump



serves to lubricate the machine, and, in the case of the chucking machine, to operate the hydraulic chuck.

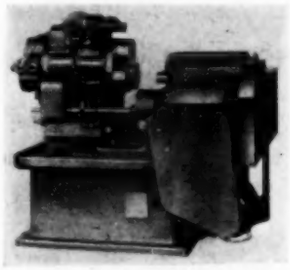
The two standard toolholders are moved longitudinally by slotted drum cams and are fed into the work by a radial cam mechanism. Maximum longitudinal movement is 4 in. A third toolholder can be fitted above the work. On the bar machine the bar pusher and the chuck are operated mechanically by a mechanism at the rear end.

Chucking Machine, Two-Spindle

Goss & DeLeeuw Machine Co., New Britain, Conn. [Vol. 74,p.444.] 182.

This machine will perform in combination such operations as boring, facing, turning, drilling, reaming and threading, but is primarily intended for jobs requiring both plain machining and threading. It is readily arranged to cut two threads of different pitches and diameters simultaneously in the same spindle.

Opposite this spindle is a faceplate carrying three workholding chucks, two of them



presenting the work to the tools, and the third, in the upper position, for unloading and loading.

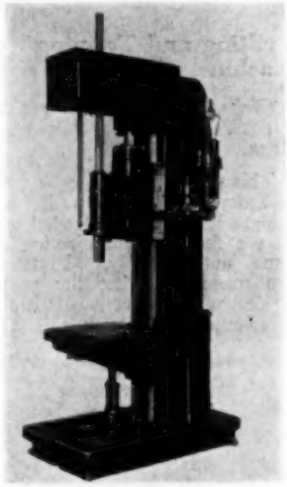
The range of the machine is 7 in. between chuck centers. Production ranges from 180 to 1,200 pieces per hour with the standard sets of feed pick-off gears. Spindle speeds range from 100 to 1,000 r.p.m. for either threading or plain machining. Depth of cut is controlled by means of a micrometer screw reading to thousandths, and thread cutting is adjustable to a fraction of a turn.

Drilling Machines

Drilling Machines, Upright, Hydraulic, "Master"

Superior Machine Tool Co., Kokomo, Ind. [Vol.74,p.466.[179.

Three sizes of heavy-duty production drilling machines—20, 25, and 30-in.—have been developed. The spindle is driven through change gears from an electric motor. The shaft running from the motor to the gears carries a sprocket from which a chain drive passes to the Oilgear pump furnishing



feeds up to 15 in. per min. The head carries a cylinder and piston, the piston rod extending upward and being secured to the frame. By regulating the movement of the head, various cycles may be secured.

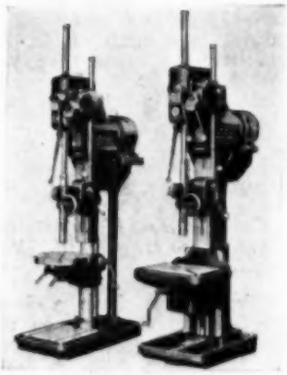
These "Master" drilling machines can be furnished also in geared-feed types, and in both single-spindle and gang types for both hydraulic and geared feeds.

Drilling Machines, Upright, "Super Service"

Cincinnati Bickford Tool Co., Cincinnati, Ohio [Vol.74,p. 884.] 303.

Either round or box column construction can be obtained in the 21- and 24-in. upright drilling machines, which may be equipped either for general-purpose or single-purpose work. The standard machine has 12 spindle speeds obtained through selective sliding gears.

The sliding head is counterbalanced and fully inclosed. A constant-mesh feed worm is employed. Either of two levers engages a positive-type feed clutch similar to that used on the "Super Service" radial. The motor, which may be either of 3 or 5 hp., is direct connected. Both the forward and reversing clutches are actuated through



internal expanding friction rings.

These uprights can be had as single units, or combined into gang drills of either the high- or low-base type.

Drilling Machines, Upright, Motor-Spindle

Leland-Gifford Co., Worcester, Mass. [Vol.74,p.69.] 31.

These machines have the motors mounted directly on the spindles with all wiring inclosed in the columns. Three sizes are built: No. 1—$\frac{7}{8}$-in. capacity and spindle speeds from 1,800 to 10,800 r.p.m.; No. 2—$\frac{3}{4}$-in.

capacity, spindle speeds from 150 to 3,600 r.p.m.; No. 3—$1\frac{1}{4}$-in. capacity, spindle speeds 145 to 1,200 r.p.m.

A magnetic contactor is operated by a treadle to stop or start all spindles. Four motor speeds are obtainable by means of a drum-type controller on the side of the head. Four other speeds may be obtained by means of a ball-bearing backgear unit. Tapping can be done by mounting a reversing motor on the spindle.

Drilling Machines, Sensitive, Ball-Bearing

Francis Reed Co., 41-43 Hammond St., Worcester, Mass. [Vol.74,p.739.] 270.

Two sensitive drilling machines with capacity for $\frac{3}{4}$-in. drills have been placed on the market. The Type S has a plain-bearing spindle with a ball thrust and the Type SB a full ball-bearing spindle. The same power feed as applied to the Type "U" machine is available on the Type SB unit. From one to six spindles can be had in either machine, the working surface of the tables ranging from $15\frac{3}{4}$x$16\frac{1}{2}$ in. to $15\frac{3}{4}$x$66\frac{1}{2}$ in.

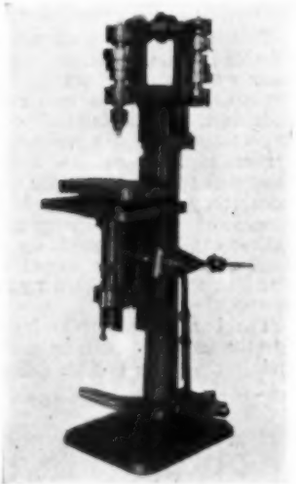
Specifications: Distance from

center of spindle to column, $8\frac{1}{2}$ in. vertical travel of quill, $5\frac{1}{2}$ in.; travel of head, $6\frac{1}{2}$ in.; vertical travel of table, 12 in.; maximum distance from table to spindle, 27 in.

Drilling Machine, No. 1

Frew Machine Co., 128 West Venango St., Philadelphia, Pa. [Vol.74,p.812.] 344.

Contrary to general practice, on this drilling machine the work is raised to and lowered from the drill. The table is counterbalanced and is operated by the treadle or a hand lever. The three-step cone permits three spindle speeds. The spindle can be arranged for either



a chuck or furnished with a taper.

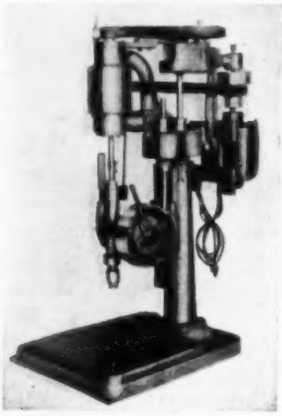
Specifications: capacity, $\frac{1}{2}$ in.; size of table, 15x10 in.; maximum distance from spindle to table, 14 in.; center line of spindle to column, 7 in.; floor space required, 32x20 in.; net weight 680 lb.

Drilling Machine, Sensitive

Canedy-Otto Manufacturing Co., Chicago Heights, Ill. [Vol. 74,p.73.] 17.

Both the floor-type and the bench type 15-in., sensitive drills are now available with the "C-O-Matic" automatic power feed, which is for use with indexing tables, automatic loading devices, or hand-loaded fixtures.

The feed consists of the usual



rack and pinion on the spindle quill, with the pinion driven through a friction disk and ratchet clutch by a wormwheel and worm. On the inside face of the hollow wormwheel, projections or teeth are cut at intervals to drive the clutch member by means of a single tooth cammed into position under certain conditions. Three feeds are provided by a gearbox.

Drilling Machine, Sensitive, Bench, "Maximus"

Adolph Muehlmatt, Cincinnati, Ohio. [Vol.74,p.924.] 397.

This bench-type machine is suitable for the laboratory, toolroom and production work. By the application of a universal slide rest, the "Maximus" can be converted into a universal vertical milling machine. Four ranges of spindle speeds are obtainable by means of the four ranges of motor and spindle pulleys available. Speeds up to 3,500 r.p.m. can be obtained as standard and up to 4,375 r.p.m. as special.

The base is unusually large for the handling of both work and jigs. Holes can be drilled

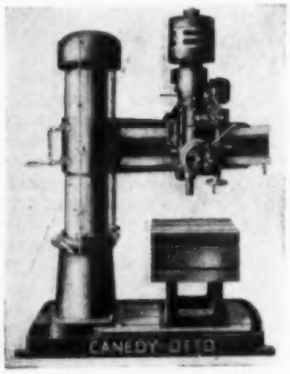
to the center of a 16 in. circle. Vertical capacity is 10 in. between the base and the chuck, but may be increased. A round table 5½ in. in diameter and a 10x6-in. rectangular table, fitted over the round table, are included in the regular equipment. Drilling capacity, ¼ in.

Drilling Machine, Radial, 3-Ft.

Canedy-Otto Manufacturing Co., Chicago Heights, Ill.]Vol. 74,p.222.] 44.

Direct drive from a four-speed induction motor on the head is the feature of the "C-O" 3-ft. radial drill. A back-gear furnishes four additional speeds. Push-button control is provided. Timken bearings in the quill support the spindle.

Four feeds are provided through a train of heat-treated, alloy-steel gears. The saddle is supported on a row of steel



balls. Vertical movement of the arm on the column is by a ½-hp. ball-bearing motor.

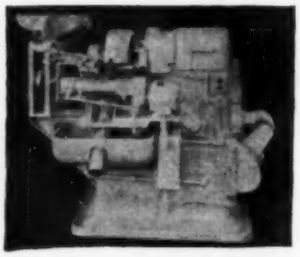
Specifications: Diameter of column, 10½ in.; distance from bottom of spindle to base, maximum, 50 in.; minimum, 11 in.; distance from spindle to column, minimum, 11 in.; traverse of spindle, 10 in.; traverse of head on arm, 27 in.; traverse of arm on column, 30 in.

Drilling Machine, Horizontal, Continuous

Fitchburg Grinding Machine Corporation, Fitchburg, Mass. [Vol.74,p.227.] 81.

Cotter-pin holes in clevis pins, spring bolts, and the like can be drilled on this horizontal continuous drilling machine. The work is hopper fed to the magazine. The holes are drilled and countersunk, if necessary, and then ejected. Maximum length of the work is 3 in., with the hole not over ½ in. from the end, and the maximum diameter ⅜ in. The drill used is ¼ in., and the depth of hole ⅜ in.

The drum is driven by a worm and gear, and around it there is a stationary ring cam which feeds in the drill spindles as the drum rotates. The spindle pinions are driven by a cen-



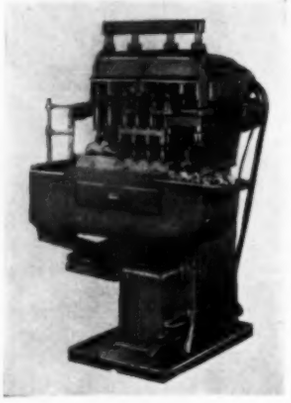
ter gear on the main drive shaft.

Fixtures are clamped on a turret on the drum shaft. These fixtures clamp automatically by means of a stationary cam. A countersinking attachment is placed in the front of the unloading turret. An automatic electrical stop tests each drilled hole.

Drilling and Tapping Machine, Conveyor-Feed

Globe Tapping Machine Co., 751 Central Ave., Bridgeport, Conn. [Vol.74,p.772.] 326.

This machine can also be furnished with a dial or push feed table. The parts are loaded onto the fixtures and ejecting is done automatically. Fixtures are made to index the parts 90 deg. when the conveyor itself is indexed. Through this ar-



rangement, holes can be drilled and tapped at any angle on the periphery of the part.

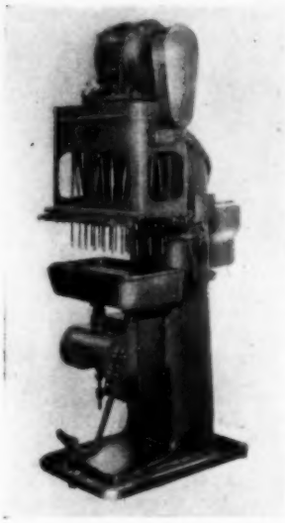
Power for the spindle drive and index mechanism is furnished by a 1½-hp. motor. The clutch is operated by a treadle. Straight-motion feed permits taking parts up to 6 in. wide and about 14 in. long.

Drilling and Tapping Machine for Small Holes, Semi-Automatic

Ex-Cell-O Aircraft & Tool Corporation, Kreuger Div., 1200 Oakman Blvd., Detroit, Mich. [Vol.74,p.995.] 416.

Twenty-one fully adjustable spindles are provided on this machine, with a minimum center distance of $\frac{7}{16}$ in. The spindles are designed for drilling or tapping holes up to ¼ in.

The table is mounted on two plungers within a tank filled with the cutting compound. When the pedal is depressed the center worktable remains stationary for a portion of the stroke while the outer or tank portion moves upward. This movement causes the work to



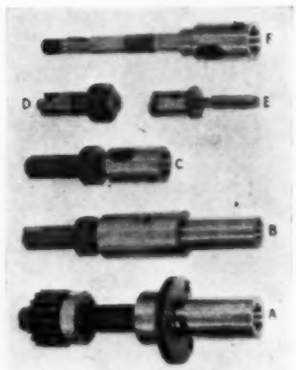
be submerged and the drilling or tapping operation is performed. The spindle drives are of standard universal-joint construction and afford a range of center distances.

Multiple-Spindle Heads, Improved, "Krueger"

Ex-Cell-O Aircraft & Tool Corporation, Kreuger Div., 1200 Oakman Blvd., Detroit, Mich. [Vol.74,p.848.] 346.

Refinements in the line permit interchangeability of the parts. The standard spindle assembly is shown at *A*. The construction of the lower end of the spindle is standard.

The standard, adjustable, full-



floating tap holder is shown at *B* (General Motors standard) and is used with spindle *A*. The holder is made in two styles, a push-out and a push-back type, actuated by an expansion or a compression spring.

A standard tap spindle is shown at *F* and the tap is held by the holder shown at *E*. The spindle at *C* is similar to *F*, with the exception that it is used with the spindle assembly at *A* when tapping blind holes.

Clamping Lock, and Fixtures

Swartz Tool Products Co., 6442 Epworth Blvd., Detroit, Mich. [Vol.74,p.559.] 198.

The fixture clamping lock is automatic in its locking action. Three sizes are manufactured, namely, ¾, 1, and 1¼ in., representing the size of shaft upon which the locks are mounted. Direct-drive design is employed for the lock. Assembly of the

lock to the fixture is readily done, since but three holes need be drilled and tapped.

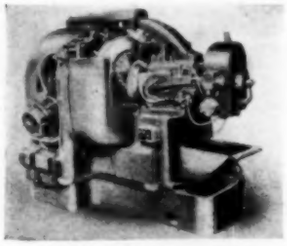
The standard fixtures are made in three open-side types and in one closed-end type. Two-post design and flanged shoulders maintain alignment between the head and the base.

Gear-Cutting and Allied Machines

Gear Roughing Machine, Spiral-Bevel, Automatic, Hydraulic

Gleason Works, 1000 University Ave., Rochester, N. Y. [Vol.74,p.374.] 146.

Time required to rough spiral-bevel gears is reduced by the automatic and hydraulic features of this unit. Gears are roughed on this machine and finished on the Gleason spiral-bevel gear generator. An overhead tie be-



tween the cutter-spindle housing and the work-spindle housing adds to the rigidity. The cutter-spindle saddle is adjustable both horizontally and vertically, and also for taking up cutter wear. Feed of the spindle sleeve is actuated hydraulically. Depth of feed is varied by an adjustable stop screw, while a control valve permits changing the time per tooth hydraulically. Change gears afford various cutter speeds.

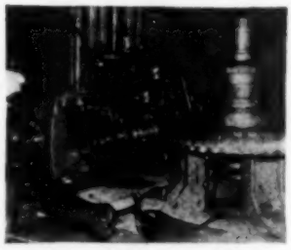
The machine is arranged for motor drive only.

Hobbing Machine, Worm-Gear, with Tangential Feed

George Scherr Co., 128 Lafayette St., New York, N. Y. [Vol.74,p.336.] 110.

Coarse-pitch worm gears, particularly those of the multiple-thread type with long lead, can be hobbed on the Reinecker No. 6-N machine. Work gears may be cut either by feeding the hob radially into the gear blank or by employing the tangential feed motion. Single-tooth fly cutters can be used.

Drive is by means of a 15-hp., constant-speed motor, with a gearbox giving 18 cutter speeds



from 15 to 101 r.p.m. The cutter head may be swiveled so that spur gears, as well as spiral gears up to 25 deg. angle, may be cut, and also worm gears with the worm axis inclined 25 deg. to the wheel plane.

Specifications: Maximum gear diameter, 90½ in.; maximum face, 23½ in.; pitch capacity, 2½ D.P.; net weight, 31,000 lb.

Hobbing Machine, Worm Wheel, Model S. R., "Pfauter"

O. Zernickow Co., 15 Park Row, New York, N. Y. [Vol. 74,p.994.] 426.

The Model S.R. wormwheel hobbing machine offers three methods of feeding: (1) radial feed of the tool towards the gear; (2) axial feed towards the gear, and (3) combination of radial feed for roughing and axial feed for finishing. Fly cutters can also be employed.

From the main drive power is transmitted by spur and bevel

gears and spline shafts to a large flywheel internal gear on the cutter spindle. The cutter speed can be changed by means of pick-off gears. The slide carrying the hobbing head is adjustable vertically for setting the cutter axis with the center of the wormwheel. The hob spindle sleeve is mounted on a swivel base. Both the radial and axial feeds of the hob operate independently and are interlocked.

Specifications: maximum diameter of wormwheel, 19¾ in.; maximum pitch, 1½ C.P.; maximum diameter of hob, 6¼ in.; hob speeds, 52 to 154 r.p.m.; power required, 7½ hp.

Hobbing Machine, Pinion and Spline-Shaft, Reinecker

George Scherr Co., 128 Lafayette St., New York, N. Y. [Vol.74,p.594.] 233.

The two models are known as the No. 0 and the No. 1. Both are made to cut lengths of 20, 40, 60, and 80 in. The first is built for spline shafts and straight spur pinions, while the second is built for spline shafts, straight spur pinions, multiple-thread worms and multiple threads, and spiral gears and pinions. The largest diameter of gear taken in either case is 8 in., and the heaviest pitch in one cut in mild steel is 3½ D.P.

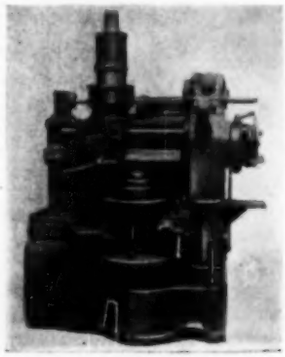
The cutter drive gearbox, the

mechanism for rotating the work, and the feed for the carriage are located in the rear of the machine. On the left end of the bed are the pick-off gears and the change gears for the index and the cutter revolutions. The massive work head has a hollow spindle with a 4-in. bore. The work is held by means of collets.

Gear Shapers, Type 64A

Fellows Gear Shaper Co., Springfield, Vt. [Vol.74,p.520.] 213.

These five machines are the same as the standard 6A and 6A-3 types, but have a massive apron. The work spindle can be arranged with sleeves to hold shank gears having a maximum shaft diameter of 5 in., or with an adapter to fit standard reverse-taper work arbors.



Capacities of the Nos. 64A and 624A types are: 18-in. external and internal spur gears, 5-in. face external, 3-in. face internal. The No. 645A will also cut helical and herringbone gears of the same range.

The Nos. 624A-3 and 645A-3 are limited to a maximum face width of 3 in. The 624A-3 will cut spur gears only; whereas the 645A-3 will cut spur, helical and herringbone gears.

Grinder, Gear, Hydraulic, 10-In.

Pratt & Whitney Co., Hartford, Conn. [Vol.74,p.806.] 345.

Grinding spur and helical gears after hardening at a cost no greater than finish cutting is the feature of the 10-in. hydraulic gear grinder. Errors in tooth form or spacing will not exceed 0.0002 in. The wheel has two sides trued to a cone which represent a basic rack. A reciprocating horizontal ram carries the grinding wheel back and forth through the teeth at speeds up to 50 ft. per min., generating the adjacent sides of two teeth at once. Maximum stroke is 6½ in. One 3-hp. mo-

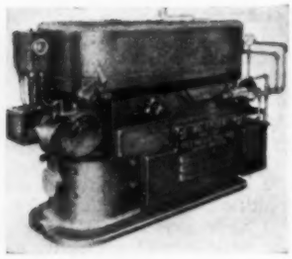
tor drives the wheel spindle. One 3-hp. motor drives two geared oil pumps and one centrifugal water pump.

The table is driven by a hydraulic motor and is reversed automatically. The table has a slow speed for grinding and a rapid one for indexing. A master gear is mounted on the end of the work spindle. The master rack is mounted on an arm which pivots horizontally to bring the rack in mesh with the master gear. The pivot is adjustable vertically for master gears from 1 to 10 in. pitch diameters, the capacity range of the machine.

Burnishing Machine, Gear, Model 2-H, "Bolender"

City Machine & Tool Works, East Third at June Sts., Dayton, Ohio [Vol.74,p.887] 333.

All movements of the Model 2-H hydraulic machine are automatic. The gear is revolved under hydraulic pressure a given number of revolutions in one direction, reversed automatically and revolved an equal number of revolutions in the oppose direction. The number of revolu-

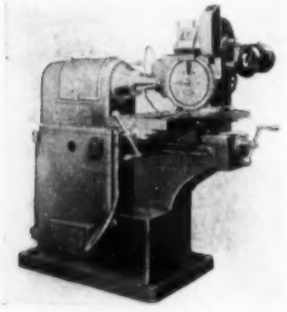


tions can be varied from three to thirty. The machine has capacity up to 14 in. O. D. gears.

Chamfering Machine, Gear, Model 3, "Peerless"

City Machine & Tool Works, East Third at June Sts., Dayton, Ohio. [Vol.74,pp.190,251 and 883] 356.

Several improvements have been made as noted in the above page references. The machine is now much heavier throughout. The spindle mounting is fixed, and the fixture head is integral with the table. The



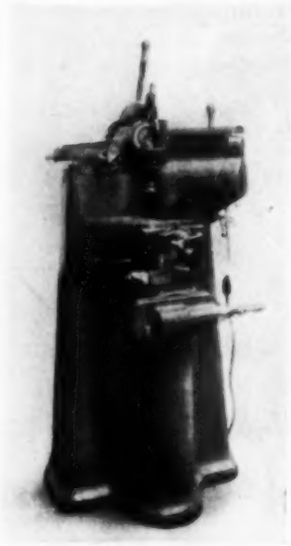
cylindrical base for the spindle head is graduated to facilitate setting. A Master geared-head motor now drives direct to the spindle, and quick traverse to the work table is optional. The universal machine is adaptable to odd lots of gears by loading four or five cams of different pitches on a sliding shaft and pulling the cam lever to the proper position. Only a driving gear need be changed.

Cutter and Sharpener, Helical-Gear

Fellows Gear Shaper Co., Springfield, Vt. [Vol.74,p.999.]

Instead of the cutting edges of the cutter teeth being ground at right angles to the helix and with a top rake of 5 deg., this

so-called "flat-top" helical cutter is sharpened by a generating action, giving a positive top rake to the cutting edges of approximately 7 deg. In this cutter every point on the involute cutting edge is in a plane parallel to the back of the cutter, resulting in no distortion in the profile generated. The cutter is



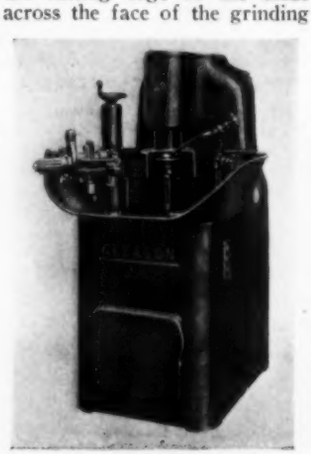
recommended for use in all cases where the pitch is 12 and coarser.

The special sharpening machine for this cutter has a wheel-head that swivels to the wanted angle. The cutter spindle is controlled in its rotation by a rack and master gear, so that the cutter is given an involute rolling action corresponding to the involute on the cutter tooth itself.

Cutter Sharpener, No. 6

Gleason Works, 1000 University Ave., Rochester, N. Y. [Vol.74,p.995.] 422.

For sharpening the small circular cutters used on its spiral-bevel gear generators, the company is offering the No. 6 spiral sharpener for cutters up to 6 in. in diameter. The cutter spindle is adjustable to any desired angle. The spindle head is swung to and fro to move the cutting edge of the blade across the face of the grinding



wheel. The wheel spindle is driven by a 1-hp., 1800- or 1,500-r.p.m., constant-speed motor connected to the spindle by means of a belt.

Gear-Tool Sharpener, No. 12

Gleason Works, 1000 University Ave., Rochester, N. Y. (Vol.74,p.522.] 208.

The tools used on any of the Gleason straight-bevel gear generators and the 60-in. spiral-bevel gear-planing generator can be sharpened on the No. 12 gen-

erator tool sharpener. Only one 7x2x¼-in. cup wheel is used to sharpen both of the tools.

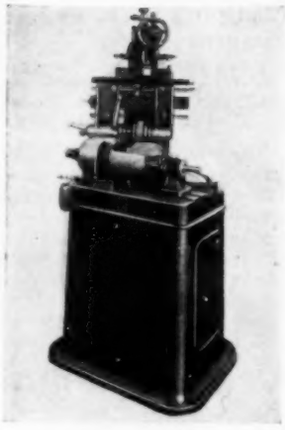
Tools are mounted in pivoted toolholders, and moved across the sheet by hand. Feed is by handwheel.

Lapping Machine, Gear-Tooth, "Red Ring"

National Broach & Machine Co., Shoemaker and St. Jean, Detroit, Mich. [Vol.74,p.737] 295.

This machine is capable of lapping both spur and spiral gears. Because the axes of the gear and the lap are crossed at a considerable angle, there is a definite cross-sliding action between the lap and the gear teeth at all points of contact.

Maximum capacity of the Model GLB is 7 in. outside diameter, 5 D.P., 1½ in. width



of face, and 12 in. between centers. Maximum capacity of Model GLE is 15 in. outside diameter, 4 D.P., 5 in. width of face, and 17 in. between centers.

Testing Machine, Gear, Universal, "Red Ring"

National Broach & Machine Co., Shoemaker and St. Jean, Detroit, Mich. . [Vol.74,p.741.]

For the measurement of the functions of helical gears, the Model SIB universal gear tester employs a rack tool gage inserted between the teeth in alignment with the axis of the

gear. A sine bar and a stack of blocks are used to measure the spiral angle.

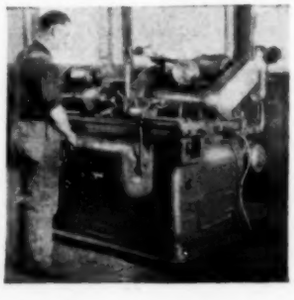
The following functions can be tested on the machine: (1) Spiral angle; (2) eccentricity; (3) index error; (4) tooth form; (5) gear centers for rolling; and (6) parallel check for spur teeth.

Grinding Machines

Grinder, Plain, Hydraulic, 6-In., Type C

Landis Tool Co., Waynesboro, Pa. [Vol.74,p.993.] 428.

The Type C machine is a rapid-traverse type and is recommended for such work as universal-joint spiders, small bearings, small motor armatures, light shafts and work of a similar nature. Hydraulic table traverse gives a range of table speeds from 6 to 240 in. per



min. By removing the large cover at the front of the bed, all control mechanisms are exposed. Provision is made for dwelling the work carriage at the reversing points. The wheel spindle is driven at the right-hand end through multiple V-belts from a balanced motor.

The hydraulic system consists of a twin-cylinder table traversing mechanism and a Tuthill internal geared oil pump. Standard equipment includes a plain wheel-feed mechanism.

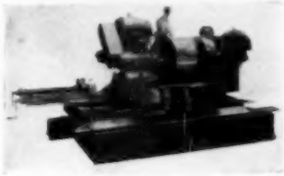
The Type C grinder is available in a 6x18-in size and a 6x30-in. size.

Grinder, Roll, 42-In.

Farrel-Birmingham Co., Ansonia, Conn. [Vol.74,p.224.] 45.

Vertical rolls for universal structural-beam mills can be ground on this roll grinder. These rolls are 42 in. in diameter with an 18-in. face. The middle portion is ground with a radius and the sides with a taper, usually either 4 or 8 deg.

The swivel table is mounted



on the carriage. Carriage traverse is accomplished by a single worm-gear reduction, in connection with the traverse screw and crosshead connected to a bell crank swiveling mechanism. This mechanism is driven by a d.c., variable-speed, reversing motor.

The headstock is of the dead-center type, the faceplate being driven by a pair of double helical gears and a worm-gear reduction. The tailstock has a sidewise adjustment and a roll-face indicator to locate the roll central with the carriage pivot.

A 30x3-in. grinding wheel is employed. Wheel speeds range from 575 to 1,150 r.p.m.

Grinder, Roll, 36x288-In.

Norton Co., Worcester, Mass. [Vol.74,p.297.[98.

The limit of allowable weight of the roll carried is 40,000 lb. The machine employs a traversing table. It will grind to a mirror finish and to within 0.0005 in. for concentricity and straightness.

The 10-in. live spindle is ball-bearing equipped. The slide is supported by large ways provided with "one-shot" lubrication. Movement of the slide is obtained by means of a large feed screw and a half nut lapped together and capable of adjustment to within 0.000125 in.

The base is 57 ft. long and is made in three sections weighing 36,755 lb. Twelve speeds are provided for the work table. The motors required are of 30 hp. for the wheel and table traverse and 20 hp. for the headstock.

Grinder, Internal, Precision, No. 104

Rivett Lathe & Grinder Corporation, Brighton, Boston, Mass. [Vol.74,p.77.] 64.

"Dumore" No. 5 or No. 7 high-speed spindle units are now employed on the cross-slide of this internal grinder. Less

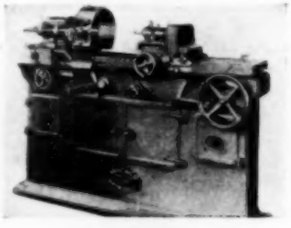
power is required, and the number of parts has been reduced. The top swivel slide can be set to the desired taper by a single screw adjustment.

With the No. 5 Dumore unit spindle speeds can be varied between 3,850 and 34,000 r.p.m. A 10,000-r.p.m. motor is used. For the No. 7 unit, employing an 8,000-r.p.m. motor, spindle speeds from 2,650 to 16,500 r.p.m. are obtained. For either unit, speeds are available in six steps. Specifications: Swing, 8 is.; maximum length of hole ground, 2 in.; working-carrying head swivel movement, 90 deg.; and floor space, 3½x5½ ft.

Grinder, Internal, Precision

Wicaco Machine Corporation, Wayne Junction, Philadelphia, Pa. [Vol.74,p.413.] 107.

Capacity to swing 12 in. inside the waterguard and to grind 10 in. in depth is embodied in this internal precision grinder.



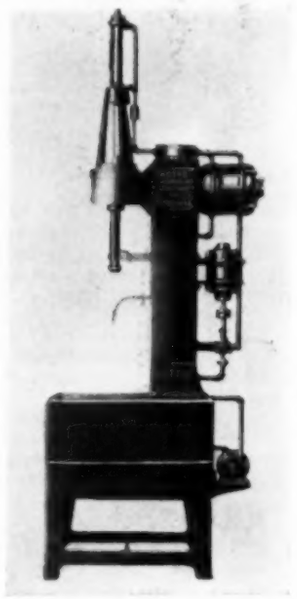
To minimize vibration, the wheel drive motor is hung under the center of the carriage. The spindle is threaded for standard chucks. The variable-speed motor provides 16 speeds for the work.

The wheelhead is surrounded by a cooling jacket, through which the grinding coolant is pumped. This prevents rise in bearing temperature. The wheelhead upper slide provides both automatic and hand cross feed, while the lower permits quick setting for taper or a step-over. Feed is automatic at the end of the carriage travel, or straight into the work without carriage travel. The automatic feed can be raised by 0.0002-in. steps, from zero to 0.001-in. per stroke.

Grinder, Internal, Vertical, Model No. 200

Hutto Engineering Co., Inc., Detroit, Mich. [Vol.74,p.485.] 185.

Bores from ¾ to 3 in. by 10½ in. deep can be ground on the Model No. 200 vertical production grinder. Distance from the spindle to the face of the column is 7¼ in. Minimum distance from table to spindle is 22½ in., and the maximum, 33½ in.



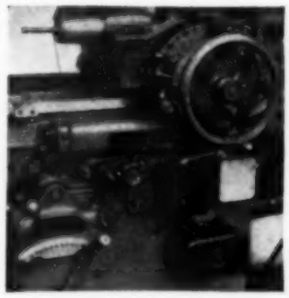
Through the use of a hydraulic system, the stroke of the spindle may range from 1½ to 10 in., at speeds of 0 to 80 ft. per min. Spindle speeds are 212 to 660 r.p.m.

The machine is built in single-base and double-base models. For the single-base model the table working surface is 18x26 in.

Sparking-Out Attachments for Internal Grinders

The Heald Machine Co., Worcester, Mass. [Vol.74,p. 188.] 46.

Sparking-out attachments for use with the No. 72A Size-Matic and the No. 72A Gage-Matic internal grinders have been developed. By automatically interrupting the cross feed and allowing sufficient time for the spindle pressure to dissipate



itself as the wheel is reciprocated in the bore, these attachments aid in producing accurate holes.

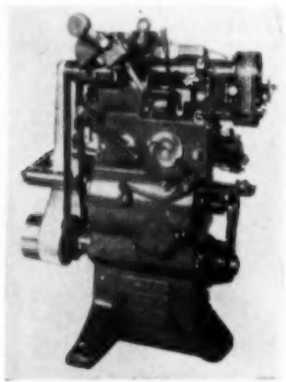
On the Gage-Matic, when the roughing gage enters, an electrical contact is made that actuates an electro-magnet on the cross-slide unit, disengaging the feed pawl. The hole is brought to size by the pressure remaining between the wheel and the work.

On the Size-Matic a time relay is mounted on the machine to regulate the sparking-out time, and a cam attached to the top of the fine feed cam on the handwheel stops the feed just after the finish contact on the handwheel is made. A uniform amount of stock is removed in a given period of time after the feed is stopped.

Sizing Equipment, for Chucking Grinder, Automatic, Electrical

Bryant Chucking Grinder Co., Springfield, Vt. [Vol.74,p.664.] 240.

Contact between a carbon washer adjacent to the grinding wheel with a carbon sizing ring mounted in the chuck causes the automatic electric sizing equipment for the No. 3 grinder to



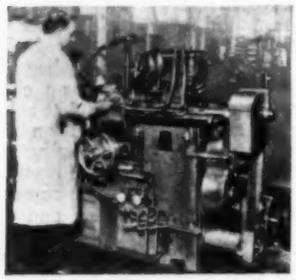
function so as to back off the feed. The carbon washer and wheel being mounted side by side are dressed to the same diameter. The sizing ring is easily replaced and forms a part of the backing spider, its design depending upon the type of chuck. By applying different voltages it is possible to knock off at different sizes.

This sizing control can be attached to new machines or to machines in service, particularly the No. 3 grinder.

Grinder, Shoulder, Automatic, Angle-Wheelhead

Arter Grinding Machine Co., Worcester, Mass. [Vol.74,p. 411.] 160.

Shoulders, including fillets, can be ground on such parts as steering sectors and differential pinions by this machine. A turret indexes the piece to the grinding position. Two live centers pick up and drive the



work. The wheelhead unit has two slides, one moving toward the work and the other moving parallel with the work spindles. The forward slide is mechanically operated by cam control, whereas the cross-slide is hydraulically operated and has a dash-pot control. Grinding is done with the combined movements. Work is ejected automatically. The wheel spindle is positioned at an angle of 45 deg. with the work spindles. The wheel is so dressed that the cutting face is parallel with the shoulder.

Grinder, Surface, Hydraulic

Norton Co., Worcester, Mass. [Vol.74,p.487.] 200.

For general toolroom and production use, this 10x12x24-in. hydraulic surface grinder has sufficient power to handle a

wide range of work. Controls are closely grouped. Centralized lubrication has been installed for important bearings. A single motor drives the machine. Table reciprocation is hydraulic, and wheel feed is hand controlled with an index graduated for 0.00025 in. Wheel traverse is also hand operated, with one speed for grinding and another for truing. Hydraulic wheel traverse is available on order. The wheel spindle is suited to work with interrupted surfaces.

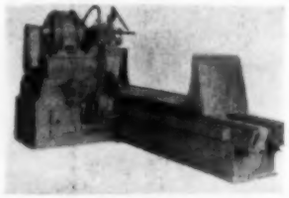
Floor space, 5 ft. x 8 ft.; weight, 5,500 lb.

Grinders, Surface, Hydraulic, No. 900 Series

The Hanchett Manufacturing Co., Big Rapids, Mich. [Vol.74, p.700.] 272.

The work table is operated hydraulically. Table speeds range from 0 to 90 ft. per min. as standard, and to 160 ft. per min. as special. Controls are conveniently placed. A pedal is used for bypassing the dogs and running the carriage to the safety dogs when loading, unloading or inspecting the work.

The wheelhead is also actuated hydraulically. Automatic feeds range from 0.00025 to 0.005 in. Independent hand cross feed is also supplied. The



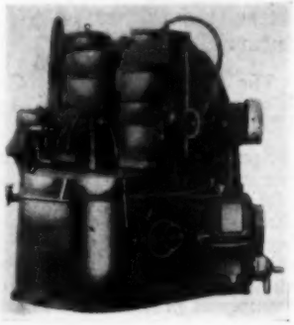
machine can be used for railroad-shop operations and general industrial use. It can be fitted with various types of plain and revolving magnetic chucks for knife bars.

The No. 900 series machines are made in capacities from 50 to 192 in.

Grinder, Surface, Two-Head, Automatic, No. 16-A2

Blanchard Machine Co., 64 State St., Cambridge, Mass. [Vol.74,p.518.] 183.

The No. 16-A2 double-head machine has been brought out for work requiring high accuracy and finish, or for work requiring more stock removal than is possible with a single wheel. Use of both a roughing wheel and a finishing wheel simplifies wheel selection, reduces wheel cost per unit of work, and improves accuracy. Each wheel is controlled independ-



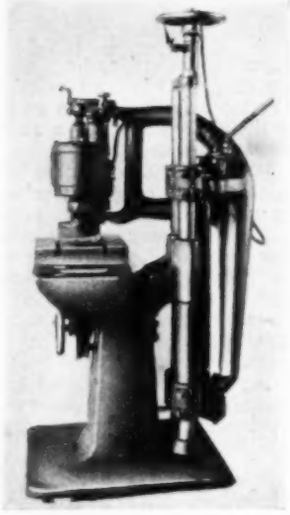
ently by its own wheel-control caliper. Pieces are ground to plus or minus 0.001 in. on soft work and 0.0005 in. on hardened work.

Two columns, each carrying a wheel head, are independently adjustable so that the alignment of each spindle can be made independently with reference to the table or chuck. The work-holding surface of the table is 40 in. in outside diameter and 26 in. in inside diameter, and the work to be ground must lie between the 26-in. circle and a 43-in. clearance circle. Overall dimensions are 7 ft. 5 in. long by 7 ft. 3 in. wide, and height is 8 ft. 1 in.

Grinder, Surface, "Ace"

L. V. Goebbels, 4419 Larchwood Ave., Philadelphia, Pa. [Vol.74,p.388.] 117.

The grinding wheel is mounted in a swinging arm so that the operator may determine or "feel" the highest efficient rate of feed. This grinder is especially adapted for the maintenance of punches and dies,



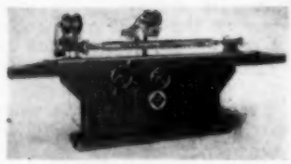
since the scales and indicators permit the table to be reset for duplicating the amount of shear ground on the cutting or punching members.

The 12x18-in. worktable is adjustable at an angle to the plane in which the wheel travels, both in the transverse and lateral directions. The height of the travel of the wheel over the table is 11 in.

Grinder, Broach

La Pointe Machine Tool Co., Hudson, Mass. [Vol.74,p.380.] 130.

Capacity to take 60 in. between centers is embodied in this broach grinder. The swivel head can be set for face grinding the teeth of a broach revolved on centers. The swivel-head slide and table roll on ball bearings mounted between the hardened and ground steel ways.

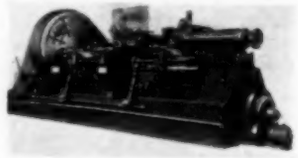


The grinding spindle is also mounted on ball bearings and can be turned in any required position. Adjustable stops govern the movement of the cross-slide.

Grinder, Journal, Locomotive-Axle

Niles Tool Works Co., Division General Machinery Corporation, Hamilton Ohio. [Vol. 74,p.301.] 93.

Wheel sets having 90-in. drivers and inside journals from 12 to 18 in. in length can be swung on this grinder. The machine is arranged with a combination



grinding and cutting rest for either independent or simultaneous refinishing of inside journals. It can also be arranged with a similar rest for refinishing outside journals. Floor-to-floor production time is 30 min.

The grinding unit is located at the rear of the rest and cutting tools at the front. Cutting tools are essential for facing hub liners and also for taking in initial cut over badly worn or scored journals.

Grinder, Knife, Type GK

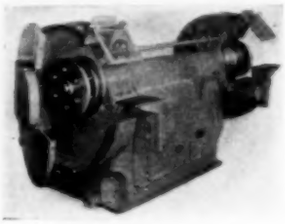
Covel-Hanchett Co., Big Rapids, Mich. [Vol.74,p.846.] 347.

For the sharpening of planer knives as used in pattern rooms and wood-working plants, and also for the grinding faces of small parts, this Type GK knife grinder has a cabinet base, ball-bearing arbor, Hanchett "Red-Anchor" cylinder grinding wheel, and water attachments. It is intended for full automatic operation. Standard equipment includes a 12-, 14- or 16-in. grinding wheel. The wheel is fed to the work. Cross feed of the grinding wheel to the work is both by hand and automatic means. Automatic feed is adjustable between 0.0005 and 0.002 in.

Grinder, Snagging, No. 50

Standard Electrical Tool Co., Cincinnati, Ohio. [Vol.74,p. 849.] 317.

The No. 50 high-speed ball-bearing snagging grinder carries two 30x3x12-in. grinding wheels operating at 9,000 s.f.p.m. The grinding spindle is driven by four Dayton "V" cog belts.



The motor is operated by an automatic starter connected with the push-button station. The 4-in. grinding spindle is equipped with double-row SKF ball bearings.

Grinder, Bench

Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.74,p. 1001.] 413.

This 6- and 7-in. wheel grinder is now equipped with an improved commutating-type, repulsion-induction motor to com-

ply with the more stringent electric codes now in effect in many localities. The starting current under all conditions is unusually low.

Grinder, Tool, "Universal Giant"

T. B. Wood's Sons Co., Chambersburg, Pa. [Vol.74,p.335.] 124.

For tungsten-carbide and high-speed steel tools, the "Universal Giant" tool grinder employs two sliding tables that may be tilted. A tool guide is mounted on a

straight edge that travels in slotted ways parallel with the edge of the grinding wheel. The tool guide may be set at any angle to the cutting edge of the grinding wheel.

The wheels are 12x4 in., running at 5,600 surface ft. per min. Drive is by means of a reversing, ball-bearing motor, so that either right- or left-hand tools can be sharpened.

Grinder, Tool, Improved, Universal

Gisholt Machine Co., 1201 East Washington Ave. Madison, Wis. [Vol.74,p.447.] 173.

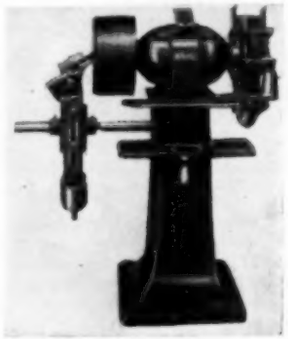
Several improvements have been made to adapt this universal tool grinder to sharpening tungsten-carbide tools. The spindle has been redesigned to incorporate a spring-cushion, ball-thrust bearing. Excessive

pressure against the face of the cup wheel cannot be exerted. If tools other than tungsten carbide are being ground, this cushioning device may be locked out. Oil gages have been added to both front and rear bearings.

Grinder, Tool, Tungsten-Carbide

United States Electrical Tool Co., 2490 West Sixth St., Cincinnati, Ohio. [Vol.74,p.557.] 216.

An adjustable table and a sliding guide, which together hold the tool securely at any angle against the cup wheel, are em-



ployed on this tungsten-carbide tool grinder. Any angle for the tool rest is set to the protractor markings. The tool rest is also adjustable for height and for wheel wear. The grinder can also be furnished with a cup wheel and a swinging table on both ends.

Grinder, Tool, Welded

Forbes & Meyers, 172 Union St., Worcester, Mass. [Vol.74, p.997.] 414.

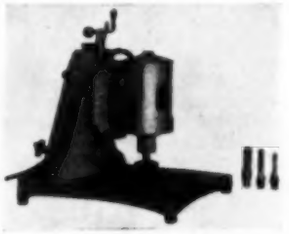
This welded grinder has 10x 1-in. wheels, mounted on the motor shaft, and operates at 1,800 r.p.m. A toolrest is provided on the left end only. The

right-hand wheelguard has a large opening for work which cannot be handled on the regular toolrest. Both wheels have permanent guards. The ball bearings employed are of the grease-seal type.

Grinder, Die, "Grindrite, Jr."

Koestlin Tool & Die Corporation, 3601 Humbolt, Cor. Magnolia, Detroit, Mich. [Vol.74, p.190.] 38.

Four interchangeable grinding wheels can be used on the "Grindrite Jr." tool or die room grinder. This machine is equipped with a ½-hp. vertical grinding head having a maximum speed of 12,500 r.p.m.



under no load and 7,500 r.p.m. with the largest grinding wheel. The bench space required is 14x18½ in., the height over-all is 20 in. The weight is approximately 125 lb.

The grinding head may be swung 5 deg. in either direction to grind clearance in dies. A diamond dresser may be advanced by means of a hand screw.

Grinder, Hacksaw-Blade, No. 112

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.74,p.666.] 238.

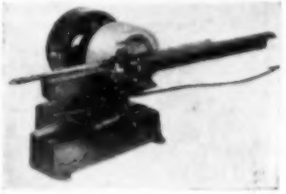
This machine will sharpen any width and any length of power hacksaw blade and any number of teeth from 14 to 4

per in. It can be adjusted to sharpen alternative teeth at opposite angles, to give the saw a free cutting action. A ½-hp. motor is furnished.

Grinder, Keyseater, No. 110

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.74,p.417.] 112.

For sharpening the face of the tooth and giving any desired undercut, the No. 110 grinder for keyseaters grinds the cut-



ting edge similar to a chip breaker, every other tooth having a different angle. It is fed by hand with a spring to locate the tooth to be ground.

Grinder, Reamer, No. 4-R

Greenfield Tap & Die Corporation, Greenfield, Mass. [Vol.74,p.187.] 52.

This machine can be adapted by use of attachments to perform the operations of a universal cutter and reamer grinder, including cylindrical and inter-

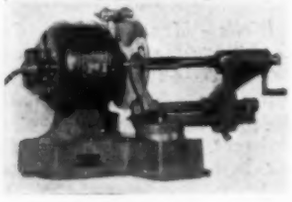
nal grinding. Adjustable stops are provided for shoulder work. The work table has vertical and horizontal movements, and screw adjustment for taper work. The machine is suitable for grinding both straight- and spiral-flute reamers.

Specifications: distance between centers, 21 in.; swing over table, 6¼ in.; length of table travel, 19 in.; cross feed, 6 in.; vertical feed, 8 in.; distance from center of wheel spindle to table at lowest position, 8¼ in.

Grinder, Tap, No. 13

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.73,p.338.] 113.

For grinding taps from ¾ to 1 in., hand taps, and pipe taps from ¼ to 2 in., the No. 13 machine employs a special chuck on which machine-screw taps as small as No. 6 can be

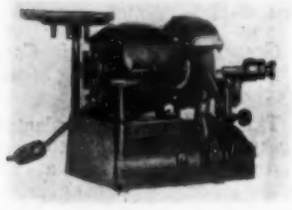


ground. The standard unit takes tools up to 7 in. long, but can be adjusted to take tools up to 12½ in. long.

Grinder, Tap and Drill, No. 1020

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.74,p.447.] 181.

For sharpening both taps and drills from ¼-in. down to the smallest size, this grinder has the tap or drill mounted in a



draw-in chuck held in a quill. The quill is slid in to the lining-up holder at the left, and then inserted in the holder at the right. It is turned slowly until the tool is sharpened. A cam produces correct relief.

Honing Machine, Hydraulic, Self-Oiling, No. 204

Barnes Drill Co., 814-830 Chestnut St., Rockford, Ill. [Vol.74,p.29.] 5.

Bores up to 4 in. in work up to 20 in. in diameter can be honed. The reciprocating and rotating spindle is hydraulically

controlled as to length of stroke. The table does not reciprocate. The cycle may be changed to suit the work while the unit is running. Length of stroke may be set by adjustable stops. The hydraulic cylinder provides for any vertical spindle travel up to 12 in.

Specifications: Height, 11 ft. 1 in.; distance center of spindle to face of column, 10¼ in.; maximum distance from top of table to nose of spindle, 41 in.; minimum distance, 4¼ in.; rate of reciprocation, 1 in. to 50 ft. per min.; size of regular table, 17x28 in.; floor space, 45½x20 in.; weight, with motor and starter, 1,700 lb.

Angle Plate, Sine

Franz K. Krag, 319 North Albany Ave., Chicago, Ill. [Vol. 74,p.450.] 180.

The device consists of two hinged elements arranged so that the one may be clamped at any angle between 0 and 45 deg. The bottom element is provided with a ground, hardened and

lapped anvil, and the upper element with a lapped cylinder. Precision blocks are placed between the elements to measure the sine of the angle. The upper plate is drilled with a number of ¼-in. holes.

Chuck, Magnetic, Swivel-Taper

J. & H. Electric Co., Inc., 200 Richmond St., Providence, R. I. [Vol.74,p.223.] 20.

This combination swivel-taper magnetic chuck is now available in 5x13 and 7x16 in. sizes. Essential parts are a base, cradle, and trunnioned magnetic chuck. The base carries the

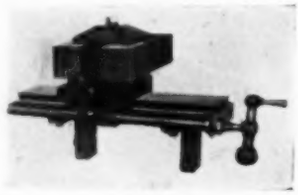
pivoted cradle and the elevating screws, indicator plates, and pointers for taper grinding.

Maximum bevel obtainable is 45 deg. from the horizontal in either direction. The taper indicator is graduated in steps of ¼ in. taper per foot.

Grinding Fixture, Commutator and Slip-Ring

Ideal Commutator Dresser Co., Sycamore, Ill. [Vol.74,p. 526.] 217.

In the "Perfect" model grinder, the screw is now located in the back of the bedplate, the head rides on a solid plate,



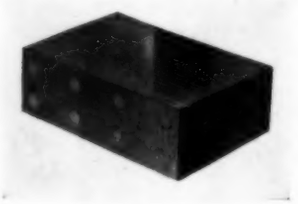
stones are held by one plate, and a cross-feed handle of the lathe style has been added.

In the "Ideal" grinder, the rack gear has been reversed, and a star knob handle has been added.

Magnetic Blocks, "Bull Dog"

Congress Tool & Die Works, 430 South Green St., Chicago, Ill. [Vol.74,p.298.] 95.

Magnetic blocks for supporting pieces to be ground are manufactured on a standardized, interchangeable basis by the

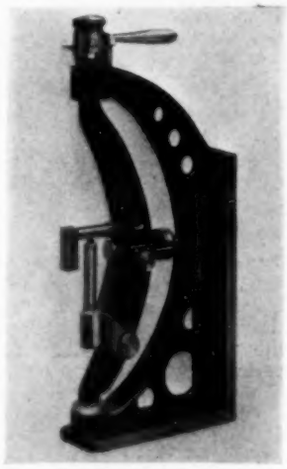


above company. They are built up of laminations of "electric" steel, separated by non-magnetic layers of uniform thickness. Sections are riveted together by non-magnetic rivets. The blocks measure 3¾x2¼x1¼ in., and all faces are ground true. Two or three blocks may be mounted on top of one another in series or placed parallel. The blocks are sold in pairs from stock.

Radius Dresser

Majestic Tool & Manufacturing Co., Detroit, Mich. [Vol. 74,p.700.] 251.

The dresser is equipped with a graduated dial with adjustable stops to allow dressing of 90 deg. without fear of the diamond digging into and marring the wheel face. With the



toggle-action diamond holder, it is possible to dress concave radii to a full 180 deg., without excessive grinding away of the mounting. The toggle is easily removed to permit insertion of a radius diamond for the dressing of convex radii.

Scraping Tools for Long Bores, "Revocipers"

Hutto Engineering Co., Inc., 515 Lycaste Ave., Detroit, Mich. [Vol.74,p.960.] 408.

Mechanical scraping of long bores can be done with "Revocipers." The term "Revocipers" is derived from the revolving and reciprocating actions of the

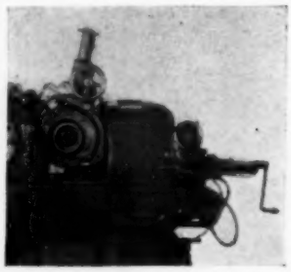
tool. The round-nosed blades are held in holders and set in soft metal.

The tool is specially adapted for use in honing machines for finishing long bores. It is not intended for rough boring, but is designed to remove excessive stock to prepare the bores for honing, but the satin finish is sufficiently good for many classes of work. The cut cannot exceed 0.002 in.

Sizing Device, Grinder, Automatic

Cincinnati Grinders Incorporated, Cincinnati, Ohio. [Vol. 74,p.595.] 232.

In centerless grinding, the throat dimension between the grinding wheel and feed wheel determines the size of the piece.



This automatic sizing device advances the feed to maintain the throat dimension within close limits.

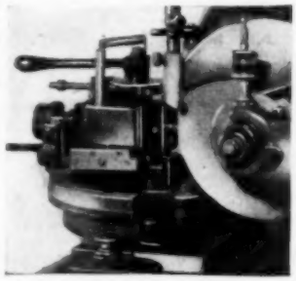
An electric contact gage is mounted on the rear of the work fixture, and operates with an increase in diameter of 0.0001 in. on the work. It energizes a solenoid valve, which by hydraulic means operates the infeed slide screw.

Truing Attachment, Formed-Wheel

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.74,p.265.] 48.

This attachment for truing three radii—on the two sides and the face of a grinding wheel—is not stocked.

The device consists of a base bolted to the table of the machine and carries a swiveling member movable to three positions. Incorporated in the swiveling member is a former, shaped to the required radius. The diamond toolholder is carried on a pair of slides mounted on the swiveling member. These slides are placed at right angles,



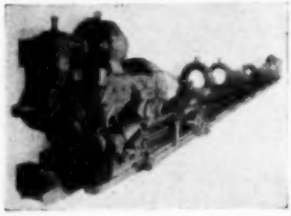
to give the holder both longitudinal and transverse movements. A follower forms a part of the slides. The device is indexed by a hand lever to the required positions.

Lathes

Lathe, Double-End, 42-In. x 80-Ft.

American Tool Works, Cincinnati, Ohio. [Vol.74,p.735.) 245.

The lathe provides capacity for occasional machining of propeller shafts up to 60 ft. in length. In reality, it is two complete lathes built on one bed. The headstock carriage,

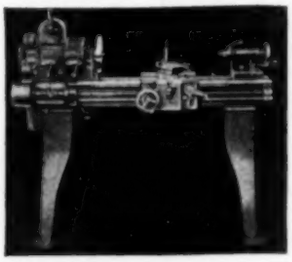


tailstock, fed and screw-cutting mechanism, and carriage power traverse of each lathe operate independently. Each carriage is complete with taper attachment, power angular feed to the compound rest and rapid power traverse. Each head is driven by a 30-hp. motor, having a speed range of 500 to 1,500 r.p.m. Weight, 100,000 lb.

Lathes, Engine, "Regal"

R. K. LeBlond Machine Tool Co., Cincinnati, Ohio. [Vol.74, p.375.] 137.

For use in general-service shops, schools, garages, experimental laboratories, and other places where light manufacturing is done, these "Regal" engine lathes are built in five sizes from 10 to 18 in.



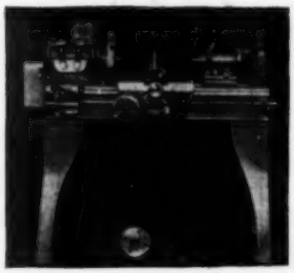
The lathe has an 8-speed, selective-gear headstock, using heat-treated steel cluster gears. Final drive from the intermediate shaft to the spindle is thorough helical gears. The head is driven by V-belts from a motor located at the rear.

The tailstock can be set-over. The feed mechanism has practically the same quick-change box and apron as used on the LeBlond heavy-duty engine lathes. Two levers are used to get 24 changes of feed, and by means of the slip gear on the quadrant 48 changes are possible.

Lathes, Engine, 12-, 16-, and 20-In. "Viking"

Sebastian Lathe Co., Cincinnati, Ohio. [Vol.74,p.486.] 193.

These "Viking" lathes are lower in price than the heavier "Gold Seal" lathes, but are built with the same accuracy. An eight-speed, geared headstock gives spindle speeds from 26 to 620 r.p.m. A 15/16-in. hole through the spindle is provided, and the collet capacity is $\frac{7}{8}$ in. For cutting left-hand threads, a tumbler reverse plate is offered.



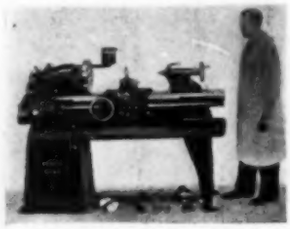
Nickel-cast iron beds are supplied for the "Viking" lathes. Power cross feed is supplied for the carriage, and reverse to the apron. A motor is fitted on a bracket at the rear left-hand leg and drives the headstock by means of a silent chain.

Lathes, with Underneath Motor-Belt Drive, Series N

South Bend Lathe Works, South Bend, Ind. [Vol.74,p. 665.] 229.

This lathe is provided with a motor inclosed in the cabinet leg. It is built in sizes from 9 to 18 in. swing and in bed lengths from $2\frac{1}{2}$ to 14 ft.

Eight speed changes are pro-

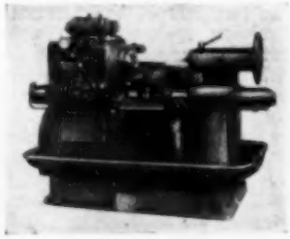


vided through the 4-step cone and backgears. All moving parts that can be protected are so covered. A drum-type reversing switch stops, starts or reverses the reversible motor. A single clutch knob operates both the automatic cross feed and the automatic horizontal feed.

Lathe, Automatic, Hydraulic, No. 12

John S. Barnes Corporation, Rockford, Ill. [Vol.74,p.703.]

This lathe has a swing of 13 in. The base, bed and headstock are cast integrally to give rigidity for the use of tungsten carbide. The multi-range hydraulic feed is non-pulsating, and is furnished by Barnes pumps driven and controlled from the main spindle. A separate gear pump supplies the rapid traverse. Feeds range



from 0.001 to 0.100 in. and those for the front and rear carriages are entirely independent.

Speed changes are made by means of pick-off gears, while herringbone gears drive the spindle. The spindle is mounted in anti-friction bearings and rotates clockwise as in the No. 17 lathe.

Lathe, Bench, Screw-Cutting, No. 608

Rivett Lathe & Grinder Corporation, Brighton, Boston, Mass. [Vol.74,p.303.] 65.

This machine is now available fully inclosed in an oak cabinet with space for accessories, but may also be obtained mounted on a bench and having the same type of drive and control.

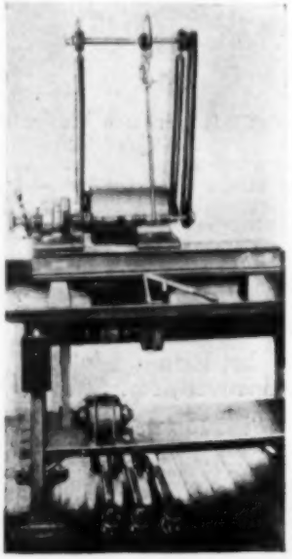
One improvement is the magnetic starter at the front. This

starter embodies start, stop and reverse buttons. The clutch handle has slow-speed, neutral, and fast-speed positions. The speed-box drive now employs two V-belts instead of chains, and the motor is mounted on a hinged plate to provide belt adjustment. A Super-Johnson double-end friction clutch is employed in the speed-box.

Lathe, Bench, for Deep Holes

Rivett Lathe & Grinder Corporation, Brighton, Boston, Mass. [Vol.74,p.343.] 59.

Rapid drilling of deep holes can be done on this precision bench lathe. A revolving-spin-

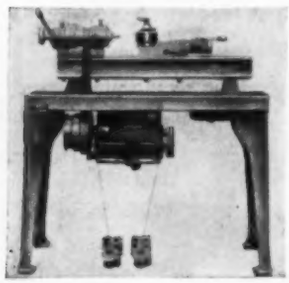


dle tailstock is employed, driven by a ball-bearing grinding countershaft. It is mounted on a unit bench with a ball-bearing, horizontal, safety-drive countershaft and jackshaft. It has the advantage of overhead drive for attachments such as the tailstock shown, and internal and external bench lathe grinding attachments. Control is by three latch-type treadles, giving high speed, low speed and reverse.

Lathe, Bench, Ball-Bearing Headstock, Series 505

Rivett Lathe & Grinder Corporation, Brighton, Boston, Mass. [Vol.74,p.225.] 66.

Tungsten-carbide tools can be employed with this bench lathe, which has ball bearings of the

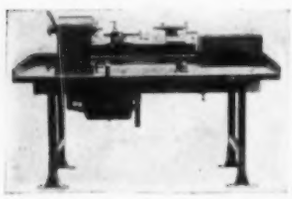


double-row preloaded type for the front spindle bearing and of the single-row type for the rear spindle bearing.

Lathes, Bench, Improved, Series 505

Rivett Lathe & Grinder Corporation, Brighton, Boston, Mass. [Vol.74,p.962.] 319.

This lathe was originally offered for use with tungsten-carbide tools (*A.M.*—page 225, Vol. 74), and featured a maximum spindle speed of 4,600

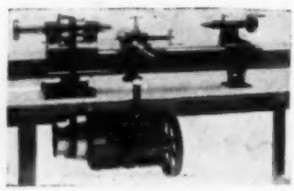


r.p.m. It is now offered with an inclosed headstock and mounted on a bench with jack pedestals. The speedbox motor drive is swung below and controlled by a hand lever. In addition to the ball-bearing headstock, four plain-bearing headstocks from $\frac{3}{8}$- to $1\frac{1}{4}$-in. collet capacities are now available.

Lathe, Bench, Plain, Improved, No. 507

Rivett Lathe & Grinder Corporation, Brighton, Boston, Mass. [Vol.74,p.1000.] 320.

The Series 507 bench lathe may now be equipped with speed-box motor drive and hand

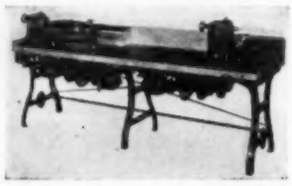


lever control. The lathe is mounted on jack pedestals and has a belt guard. The upper shaft of the speed box carries a three-step driving cone pulley, and thus with the two positions for hand lever, high and low, six speeds are available.

Lathe and Milling Machine Unit, Bench, "Cataract"

Hardinge Bros., Inc., 4147 Ravenswood Ave., Chicago, Ill. [Vol.74,p.742.] 286.

The "Cataract" motor-driven bench lathe (*A.M.*—1045, Vol. 72), and the motor-driven bench milling machine (*A.M.*—267 Vol. 74), are now offered on a single hardwood bench. Both machines are independently driven by electrical drive units



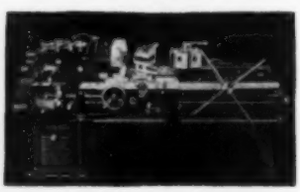
mounted under the bench, featuring a 6-speed V-belt drive.

For the lathe, the six spindle speeds in either direction, range from 200 to 2,000 r.p.m. For the milling machine, reversal of the spindle is obtained through a standard reversing motor and reversing switch.

Lathe, Turret, 20-In x 10-Ft.

Cincinnati Lathe & Tool Co., 3207-3211 Disney St., Cincinnati Ohio. [Vol.74,p.849.] 341.

This machine is fitted complete with a hexagonal turret on the bed, power feed, square tool block in the compound rest and a four-jaw independent chunk.



The turret is of the automatic revolving type with an automatic independent feed stop for each face, and may be arranged for either hand or power feed. These attachments are supplied on the turret lathes from 16 to 32 in., inclusive. The four-way tool block enables different operations to be done without stopping the lathe.

Lathe, Axle, End-Drive, No. 6

Niles Tool Works Co., Division of General Machinery Corporation, Hamilton, Ohio. [Vol. 74,p.957.] 385.

The No. 6 end-drive lathe with two carriages is a high-production machine suitable for turning axles, forgings, piston rods, crankpins, brake beam ends, and other parts, and for precision work as well as for rough turning.

The headstock is fully inclosed, and the faceplate is furnished to suit requirements. The

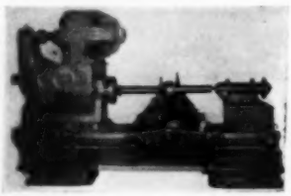
two carriages have longitudinal feed through half nuts engaging the leadscrew. Hand longitudinal traverse and hand cross feed to the tool are also provided. The tailstock can be arranged with either a live or dead center.

Specifications: swing over bed shears, 33 in., over toolslide, 16 in.; distance between centers (or to suit), 9 ft.; feeds, $\frac{3}{32}$ to $\frac{3}{16}$ in.; speeds to driving head, 16 to 48 r.p.m. in four steps; motor, 25 hp.; and floor space, 21 by $4\frac{1}{2}$ ft.

Lathe, Ball-Turning

American Tool Works Co., Cincinnati, Ohio. [Vol.74,p. 777.] 325.

The spherical-turning mechanism consists of heavy front and rear rests independently mounted on a dovetail slide, and adjusted to various work diamters by separate screws. These

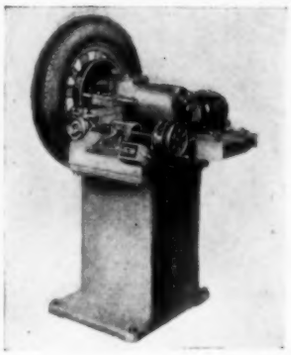


tool rests are carried by a turntable mounted on a special carriage and actuated either by hand or power through a large-diameter, bronze worm-wheel and hardened steel worms. Uniform cutting speed is maintained over the entire surface of the sphere by a speed-adjusting rheostat.

Lathe, Brake-Drum, "Raybestos"

Reed-Prentice Corporation, Worcester, Mass. [Vol.74,p. 380.] 134.

Improvements in the "Raybestos" drum lathe are as follows: Outboard supports insure

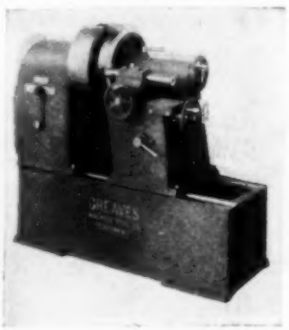


accurate alignment; control switch and adjustable stop; ratchet feed with hardened parts; $\frac{3}{4}$-hp. motor for feed and 3-speed drive; five feeds, 0.003, 0.006, 0.009, 0.012, 0.015 in.; removable cover for inspection or lubrication of gears; $3\frac{1}{2}$-in. graduated dial on cross feed; rigid base and column, and maximum feed of 9 in.

Lathe, Brake-Drum and Flywheel

Greaves Machine Tool Co., Cincinnati, Ohio. [Vol.74,p. 416.] 166.

Wheels up to 42 in. may be swung on this brake drum and flywheel lathe. Flywheels are chucked the same as in a standard lathe. The lathe can also be used for turning of commutators, the truing of differential



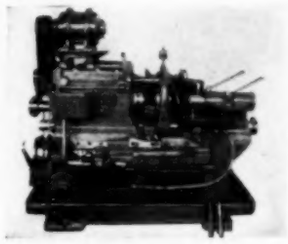
housings, rough turning of pistons, and truing of wheel flanges.

Features of the machine are: an internal gear drive on the main spindle; Timken bearings for the main spindle; shifter lever control of speeds and feeds; built-in motors; Alemite lubrication; chuck remains on spindle for all operations; hollow spindle for turning shafts; distance between centers of 24 in.

Lathe, Automatic, 12-In., "Fay"

Jones & Lamson Machine Co., Springfield, Vt. [Vol.74, p.844.] 323.

This machine with its universal camming, standard tool blocks, wide range of speeds and feeds and multiple-tooling possibilities will cover varied types of work supported be-



tween centers or held in a chuck or fixture. Four beds take 15, 21, 33 and 45 in. between centers. Swing over the center bar is 13¼ in., and over the carriage, 19½ in.

Drive to the headstock is through a multiple-disk clutch in the main drive pulley. The spindle has eight standard speeds. Either taper or straight boring or turning operations can be performed.

Screw Machine, Multiple-Spindle, Automatic, Model GA, "Gridley"

The National Acme Co., 170 East 131st., St., Cleveland, Ohio. [Vol.74,p.698.] 282.

The machine employs a box-form frame with two independent uprights and a heavy top bracket to insure rigidity. Chips drop through the center and into the pan.

The spindle carrier is approximately 5 in. longer than on previous models, and the collet tubes and feed tubes are also longer. In addition, the space between the spindles and the gear-box section has also been

lengthened to contribute greater strength to the main tool slide and to provide additional surface for mounting combination tools.

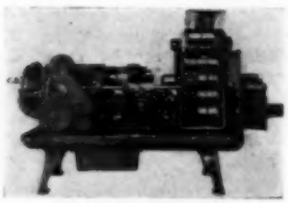
Both the forming and cut-off slides are mounted on supports cast integral with the bed. The upper two cross-slides are exactly the same. Each slide is operated independently by cams.

The machine is made in 1⅜-, 1⅝-, 2⅜-and 3⅛-in. sizes.

Screw-Machine Control, Electrical

Allen-Bradley Co., 122 W. Greenfield Ave., Milwaukee, Wis. [Vol.74,p.1000.] 425.

The company is now prepared to furnish a special a.c. control panel for the Cleveland Model A automatic screw machines. The screw machine is equipped with a four-speed motor to operate the spindle. The four-speed starter is located in the lower control panel. The



starter also contains an additional switch to control the constant-speed feed motor. Mounted above the four-speed starter is a reversing switch. The starter is controlled by a pilot control contactor operated by six levers in the small box at the end of the machine.

Boring Head, Offset, Micrometer, No. 18, Flynn

J. M. Waterson, 427 Woodward Ave., Detroit, Mich. [Vol. 74,p.225.] 57.

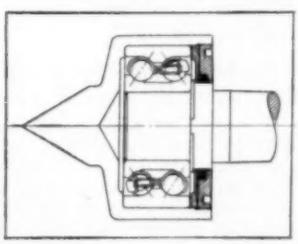
The No. 18 Flynn micrometer boring head has capacity for offsets up to 3 in. and for bores up to 6 in. in diameter. The

dial is graduated in thousandths. The height of the boring head is 1¾ in., the bar capacity, 1⅛ in., the diameter, 6 in., and the weight, 12 lb. This head can be used with shanks or can be fitted to machines having threaded spindles.

Center, Ball-Bearing, Improved

Ready Tool Co., Bridgeport, Conn. [Vol.74,p.448.] 172.

An improved and more efficient bearing closure is now employed. This closure is made in two parts, an inner piece, or washer, which contacts directly with the face of the New Departure pre-loaded, double-row ball bearing, and an outer piece, or locknut, carrying the felt



ring. By this arrangement, the thread is cut on the relatively thick outer piece.

Collets, Equalizing, for Hot-Rolled Steel

Highland Park Tool Co., 3801 Trenton Ave., Detroit, Mich. [Vol.74,p.597.] 220.

These collets can be used in automatic screw machines for chucking hot-rolled steel that is out-of-round within the limits of steel mill tolerances. All parts are ground and fitted to be in-

terchangeable, permitting renewal of worn-out parts. The back portion does not have to be removed when changing jaws from one work-hole size to another. Sizes are manufactured for hot-rolled stock up to 3 in.

Grinder, Toolpost, Heavy-Duty, Type HL-7

R. G. Haskin Co., 4630 West Fulton St., Chicago, Ill. [Vol. 74,p.226.] 56.

This Model HL-7 employs a wheel 8 in. in diameter by 1-in. face, and the wheel speed can be varied by means of a multi-speed countershaft. The unit is small enough so that it can be set to grind in all positions; that is, with the toolpost in back

of, in front of, or at right angles to the work. Drive for internal grinding is accomplished by a multiple V-type belt. Quills range from 7 to 19 in. in length.

Grinder, Toolpost, High-Speed, Precision, Midget

Dumore Co., Racine Wis. [Vol.74,p.704.] 273.

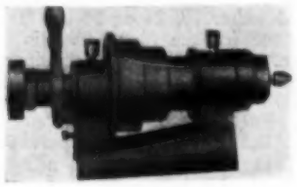
The "Midget" high-speed precision grinder can be used in a bench lathe, milling machine or grinder, and also as a hand tool. Drills from No. 42 to No. 22 can also be used. An aluminum

housing keeps the weight down to 1¾ lb. Chuck collets permit the use of round shanks ranging from 1/32 to 3/32 in. The collet is attached directly to the armature shaft. Maximum speed of operation is 20,000 r.p.m.; full load-speed, 10,000 r.p.m.

Headstock, Collet, 1¼-In.

Hjorth Lathe & Tool Co., 24 School St., Boston, Mass. [Vol.74,p.73.] 33.

A headstock having a collet capacity of 1¼ in. now supplements the ¾-in. size. It can be obtained with a special headstock lever, an index for use on the indexed cone rim.

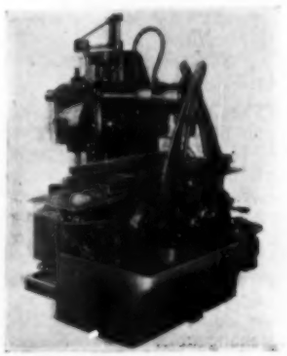


Milling Machines

Milling Machine, Plain, No. 22

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.74,p.482.] 203.

Automatic longitudinal feed is 22 in.; transverse saddle adjustment 6 in., and vertical adjustment of the spindle head, 13 in. Controls are centralized at the front. Several cycles of automatic operation are available with the dogs furnished. Power fast travel and feed are available in both directions. The



spindle rotates either right or left hand. Sixteen spindle speeds ranging from 25 to 620 r.p.m. and 16 feed changes from 1 to 38½ in. per min. are available.

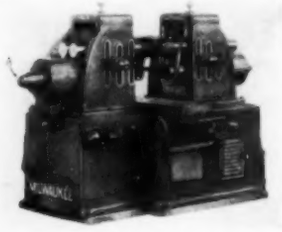
Other features include: automatic lubrication for all units in base and driving unit; pressure greasing system for the end bearings of the table drive shaft; oiling station for the saddle and table mechanism; and automatic control for coolant.

The No. 22 machine is designed for short-run jobs, but is adaptable to production jobs.

Milling Machines, Production, Duplex, 1200 and 1800 Series, "Milwaukee"

Kearney & Trecker Corporation, Milwaukee, Wis. [Vol.74, p.811.] 353.

These machines are basically constructed for the use of tungsten- and tantalum-carbide milling cutters. Three speed ranges are available for either spindle, these being 15 to 150 r.p.m.; 30 to 300 r.p.m.; or 100



to 1,000 r.p.m., each of which has 12 speed changes. Three ranges of feeds are: ½ to 20 in. per min.; 1 to 40 in. per min.; or 2½ to 100 in. per min., by 18 steps. Power rapid traverse is 240 in. per min.

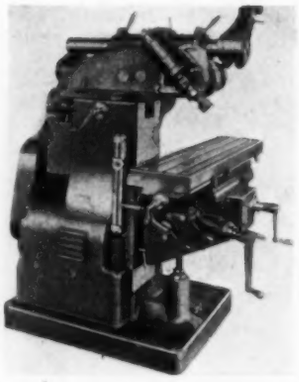
The table for the 1200 Series is 12 in. wide and is furnished with longitudinal power feeds of either 18, 24 or 30 in. The table for the 1800 Series is 18 in. wide and can be equipped with power feed of either 24 or 30 in.

Each spindle is mounted in a heavy forged quill provided with independent cross adjustment of 7 in.

Milling Machine, Universal, No. 21

Van Norman Machine Tool Co., Springfield, Mass. [Vol. 74,p.842.] 329.

The No. 21 milling machine is an outgrowth of the No. 20, but is much heavier throughout and incorporates inclosed motor drive. It retains the pivotally mounted cutter head, which can be quickly moved in or out over the table surface by means of the horizontal ram. The 10-in. centers and attachments for the Nos. 20 and 21 machines are interchangeable.

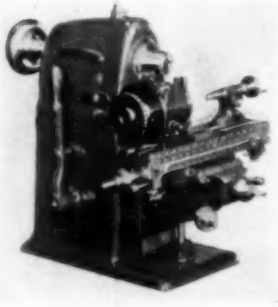


Two sprockets are mounted on the motor shaft, one driving by chain to the ram at the top of the column, and the other to the gearbox at the back. The gearbox provides 16 feeds for the saddle and knee mechanism. The top of the table and the front and rear sides are accurately finished to provide ample means for locating jigs and fixtures.

Milling Machine, Bench, Motor-Driven, "Cataract"

Hardinge Brothers, Inc., 4147-49 Ravenswood Ave., Chicago, Ill. [Vol.74,p.267.] 83.

This machine was developed as an outgrowth of the "Cataract" bench lathe and incorporates the same features in design. It employs a fully inclosed headstock with underneath V-belt drive and a 6-speed



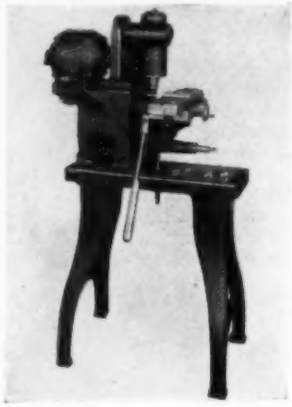
transmission. Left-hand cutters can be used by applying a reversing switch to the standard reversible motor. Collets can be interchanged between the cutter-head of the milling machine and the dividing head.

Specifications: Working surface of table, 12x3½ in.; longitudinal travel of table, 5½ in., transverse travel, 4 in.; vertical travel, 6½ in.; range of speeds, 240 to 1,725 r.p.m.

Milling Machine, Slot, Vertical, Motor-Driven, Screw-Head

John B. Stevens, Inc., 304 Hudson St., New York, N. Y. [Vol.74,p.774.] 300.

For milling slots in the heads of long screws, and also for milling across the ends of pieces too long to be held vertically on a milling machine table, this slotter holds the bodies of the screws in the V-jaws of a combination table and vise. The knee is provided with vertical adjustment for centralizing the

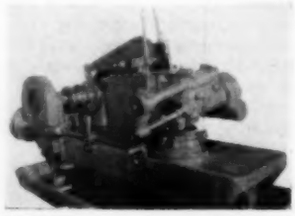


work with cutters of various widths. A ¾-hp., constant-speed motor is employed. Spindle speeds are 85, 142 and 237 r.p.m., or 61, 102 and 170 cutting feet per min. for 2¾-in. saws. Screws up to 5 ft. in length can be handled.

Milling Machine, No. 41, "Producto-Matic"

Producto Machine Co., Bridgeport, Conn. [Vol.74,p. 808.] 311.

For milling the undercut-type side teeth of hook-tooth cutters and also for milling on an angle to produce a straight land on the side teeth, the No. 41 "Pro-

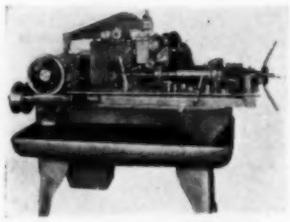


ducto-Matic" vertical work-spindle machine has a tilting cutter block and an indexing plate, which is changed to suit the cutter being made. The machine is entirely automatic, and is particularly designed for production milling of high-speed steel cutters. The stroke ranges from 0 to 3 in. Capacity—cutters up to 7 in.

Milling Machine, Spiral, No. 3½

Producto Machine Co., Bridgeport, Conn. [Vol.74,p.961.] 380.

For milling spiral teeth in counter-bores and milling cutters from ¼ to 6 in. in diameter, this machine is entirely automatic, the feeding of the cutter, the return stroke of the ram and the indexing of the work being performed automatically. The cutter spindle is driven by means of a worm

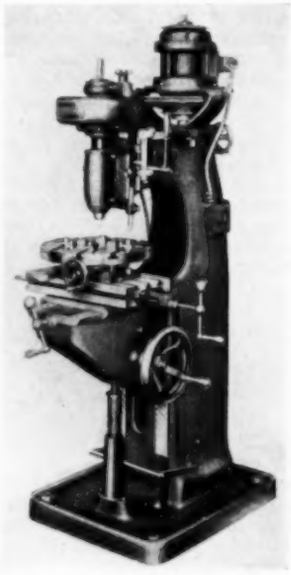


and worm gear from a universal shaft, which allows the cutter block to be held at an angle. A master spiral cam controls indexing.

Routing and Milling Machine, Vertical, No. 2V

Reed-Prentice Corporation, Worcester, Mass. [Vol. 74,p. 922.] 330.

The No. 2V router is intended for work on brass, steel and cast iron, and is a redesign of the No. 2 size. Spindle speeds up to 12,000 r.p.m. can be obtained, if necessary. Drive from the ball-bearing motor is by means of a V-belt. The sliding head is operated by a clutch handle or treadle. The microm-



eter depth stop is graduated in thousandths, with a vertical scale graduated to 2 in.

Specifications: Longitudinal feed, 14 in.; cross feed, 11 in.; vertical feed of knee, 15 in. hole through spindle, ½ in.

Vise, Milling-Machine, Air-Operated, "Hopkins"

Tomkins-Johnson Co., Jackson, Mich. Vol.74,p.376.] 141.

The hardened jaws are removable to permit special jaws being inserted. Slots are provided for clamping, and keys are secured in the base for mill-

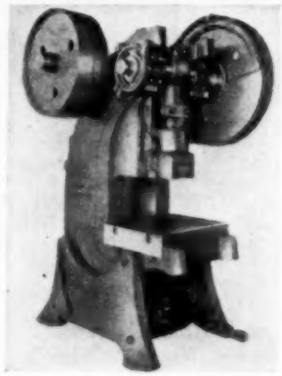
ing-machine table slots. The width of the jaw is 6¼ in. and the height, 1 1/16 in. Maximum distance between jaws is 4 in. Extreme height of the vise is 5¼ in., length of base, 24⅜ in., width of base, 7 in., and power stroke of jaw, ⅜ in.

Presses

Presses, Inclinable, No. 6

Federal Press Co., Elkhart, Ind. [Vol.74,p.1001.] 405.

Inclinable presses of both the flywheel and geared types are available. The No. 6 press has a capacity of 65 tons and weighs 9,000 lb. in the flywheel type and 11,300 lb. in the back-

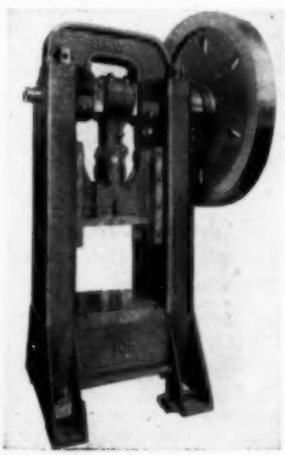


geared type. Both machines are equipped with a reclining bracket. The patented non-repeat tripping mechanism is standard equipment. Timken roller bearings are now used for the backshaft on the geared presses.

Presses, All-Steel, Straight-Sided and Inclinable

Henry & Wright Manufacturing Co., Hartford, Conn. [Vol.74,p.701.] 271.

The straight-sided presses are furnished in either flywheel, single-geared, double-geared, or triple-geared types with crankshafts up 12 in. in diameter, the larger presses being equipped with single or twin-geared drive. The base, uprights, crown and slide are made from steel plates, arc welded and annealed before



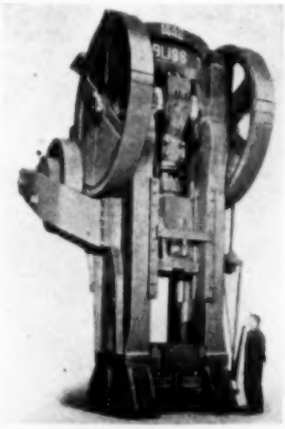
machining. All gears are of welded steel construction. Pinion shafts are mounted on Timken roller bearings. On the inclinable presses the lower end of the connection is of the ball type and contacts with a hard bronze seat in the slide. On the geared types of inclinable presses the backshafts are mounted in Timken bearings.

Presses, Straight-Sided, Single-Crank

E. W. Bliss Co., 53rd St. & Second Ave., Brooklyn, N. Y. [Vol.74,p.850.] 359.

The line of large, single-crank, straight-sided presses has been redesigned to secure improved performance in the manufacture of the heavy stampings for the automotive industry.

The bed has been designed

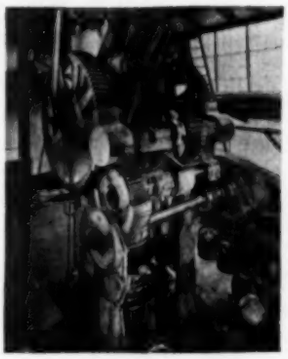


for maximum stiffness, and the housings are larger and have broader seats at both ends. An innovation is the incorporation in the housing casting of the back brackets. Depending upon the required stroke, the crankshafts are of the full eccentric, semi-eccentric or cheeked crank type. The connection has a motor-driven screw adjustment. The three-bearing drive shaft has a bearing on each housing and one on an outboard bracket. The clutch is operated through a Bliss control unit.

Press, Deep-Drawing, 1,200-Ton

Toledo Machine & Tool Co., Toledo, Ohio. [Vol.74,p.414.] 143.

For drawing 40-qt milk cans of Allegheny metal, this deep-drawing press with a rated capacity of 1,200 tons at the bottom of the stroke has been built. The stroke is 45 in., and the

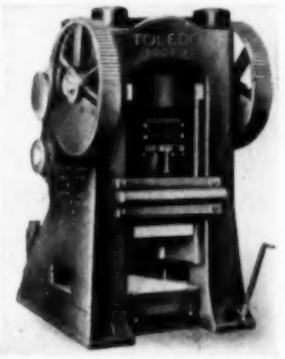


machine is 35 ft. high, 17 ft. 8 in. wide, and weighs 220 tons. In 10-gage Allegheny metal, the press can draw a round container as large as 24 in., using a blank of 68 in. Using the same alloy in 14 gage, the press can draw a rectangular shape as large as 50x40 in. by 16 in. deep.

Presses, Heavy-Duty, Improved

Toledo Machine & Tool Co., Toledo, Ohio. [Vol.74,p.523.] 207.

This series of heavy-duty presses is offered for heavy bottoming work, embossing articles of large dimensions, and both cold and hot forging operations. Massive four-piece, steel tie-rod construction is employed. The bed of the press shown measures 60 in. by 43 in. Although



the press weighs 250,000 lb., the height from the floor is only 14½ ft. The full eccentric crankshaft is made of heat-treated special steel, and exerts a pressure of 1,500 tons at the bottom of the 12-in. stroke.

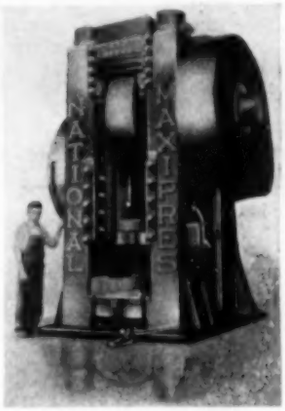
Area of the slide is 36 in. front to back by 30 in. right to left. Distance from the top of the bed to the slide, stroke down, adjustment up, is 24 in. The press operates at 30 strokes per min.

Press, Coining or Finishing, "Maxipres"

National Machinery Co., Tiffin, Ohio. [Vol.74,p.259.] 58.

Rapid coining, swaging, or forming of parts, hot, semi-hot or cold, can be done with the "Maxipres." The entire frame is a one-piece steel casting. Only three bearings are employed between the source of power and its application.

The patented over-arm slide extends over and above the eccentric shaft, forming an extended pilot bearing. The great slide length results in ability to withstand off-center pres-



sures. A one-piece, non-adjustable pitmen is employed. All adjustments for die height are located on the bed frame proper. The main shaft is of the full eccentric type. Operating control is obtained by the use of the National quadruple-abutment clutch and an air trip.

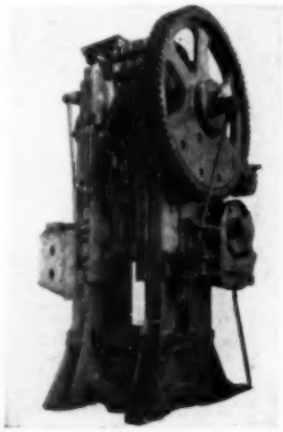
The "Maxipres" is made in eight sizes, varying in weight from 19,000 to 368,000 lb., and of similar capacity to the National forging machines.

Press, Cold Forging and Stamping

Toledo Machine & Tool Co., Toledo, Ohio. [Vol.74,p.702.]

This 85,000 lb. press is particularly adapted for extruding valve heads, coining the covers in globe valves, and any kind of forging, forming, or stamping within its capacity.

The frame is of steel tie-rod construction. The crankshaft is of the semi-eccentric type, heat-treated, and exerts a pressure of 500 tons. Bearings at both the frame and the connection are bronze bushed. The



slide measures 24x26½ in., the bed 32x33 in., and the stroke is 12 in. Distance from the top of the bolster to the underface of the slide, stroke down, adjustment up, is 28 in. The press is double geared, with an extra pinion on the drive shaft and an extra gear on the intermediate shaft to give two gear ratios, one of 8:1 and the other 20:1, in order to afford either 12 or 30 strokes per min. The clutch is of the improved multiple-disk friction type.

Presses, All-Geared, Equipped with Roller Bearings

Federal Press Co., Elkhart, Ind. [Vol.74,p.302.] 97.

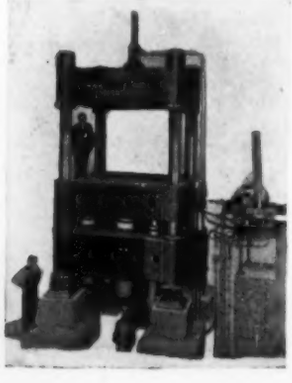
As standard equipment on the all-geared press, the company has applied Timken roller bearings built into adjustable housings in the backgear bracket. Decreased power consumption results. Two bearings are used in each housing.

Press, Hydraulic, 1,500-Ton

Farrel-Birmingham Co., Ansonia, Conn. [Vol.74,p.335.]

This press is designed for flanging and forming heavy metal parts. Besides the main 34-in. ram, which provides a pressure of 1,000 tons, two 18-in. auxiliary rams each provide an additional 250 tons pressure. The press, therefore, can be used as a triple-capacity machine; that is, for 500 tons, 1,000 tons or 1,500 tons pressure. The 500-ton capacity can be used for clamping and the 1,000 tons for drawing.

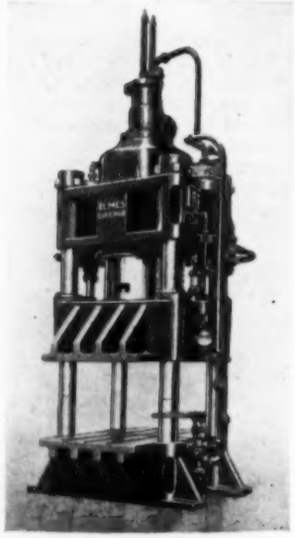
The press is 97x85 in. clear between the tie-rods, and has a maximum opening of 72 in. and a stroke of 48 in. Over-all height from the floor to the top is 13 ft. 8½ in., and the distance below the floor is 20 ft. 11½ in. Floor space required is 13 ft. 3 in. x 9 ft. 6 in. The press is equipped with one 250-ton knockout cylinder located in the top platen.



Press, Hydraulic, Blanking, Forming and Straightening

Charles F. Elmes Engineering Works, 1001-1013 Fulton St., Chicago, Ill. [Vol.74,p.959.]

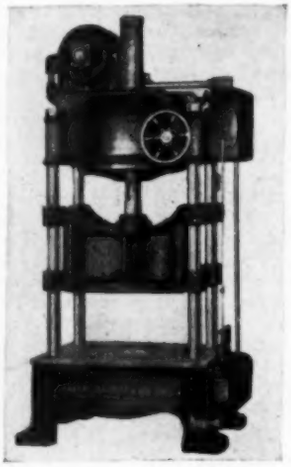
Single lever control is featured in this heavy-duty, high speed blanking, forming and straightening press. It is designed for a prefilling system and can be operated from a variable-delivery, single-direction pump. In the press illustrated, the idle down speed is approximately 200 in. per min., the pressing speed about 20 in. per min., and the return speed 190 in. per min. To secure accurate alignment and travel, the moving platen is equipped with renewable bronze guide bushings of extra length. All major members are annealed steel castings. Presses of this type can be built in sizes and capacities to suit requirements.



Press, Screw-Type, 100-Ton

Jarecki Machine & Tool Co., Grand Rapids, Mich. [Vol.74, p.30.] 4.

This 100-ton model is operated by a 10-hp. motor, and is equipped with an automatic reversing-type switch, enabling the operator to predetermine the depth of the ram travel before the automatic reverse engages. Limit switches regulate the extreme travel of the ram in both directions. A push-button switch starts, reverses, and stops the ram instantaneously.

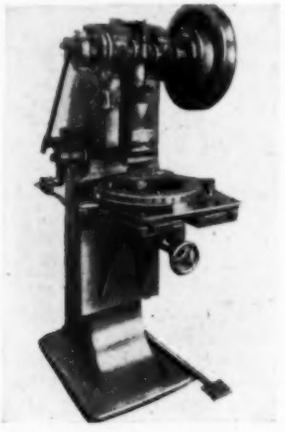


The handwheel on the head permits inching motion of the ram.

Press, Notching, High-Speed, No. 41 N

V & O Press Co., Hudson, N. Y. [Vol.74,p.734.] 298.

Attachments are provided for both internal, or stator, notching and external, or rotor, notching. The machine is capable of maintaining tolerances as close as 0.002 in. when operating at speeds of 450 to 600 strokes per min. To minimize shock during engagement at high speeds, an automotive-type, multiple-disk friction clutch is used with a fully releasable brake. The indexing mechanism is actuated by a driving crank on the press shaft.

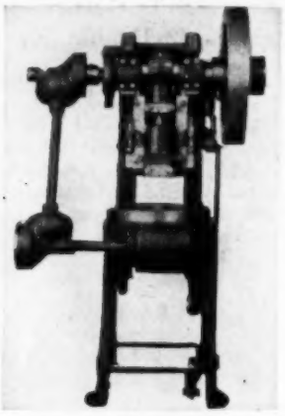


The press with external notching mechanism will notch disks from 3½ to 18 in., with a minimum of 12 notches and a maximum of 96. The internal mechanism is made to handle disks from 4 to 15½ in., with a minimum of 12 and a maximum of 132 notches.

Dial-Feed for Presses

Federal Press Co., Elkhart, Ind. [Vol.74,p.263.] 54.

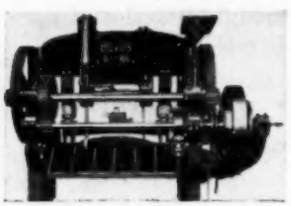
This feed is actuated from the crankshaft through two sets of bevel gears and a cam under the dial plate. The cam engages with hardened rollers attached to the bottom side of the dial, and every revolution of the crankshaft rotates the dial 1/12 revolution. The same cam locks the dial positively in place. Dial movement is accomplished in less than a quarter of the revolution of the crankshaft. With the kickout actuated from the camshaft beneath the dial, a compact arrangement is obtained.



Friction-Clutch and Brake, Press, With Magnetic Control

E. W. Bliss Co., 53rd St. and Second Ave., Brooklyn, N. Y. [Vol.74,p.740.] 259.

Full automatic features are given by this automatic multiple disk, friction-clutch with magnetic clutch and brake control. Magnet pull is transmitted directly to the moving plate of the clutch. An operator's cabinet contains a four-station transfer switch. Two start buttons requiring both hands and one emergency stop are provided for each operator. Further, a foot switch can be provided to be operated with all hand buttons locked in.



The four stations on the transfer switch give the following conditions of working: 1. Automatic top stop; 2. Continuous run; 3. Inching; 4. Automatic top stop with sustained hold.

Reel for Coil Stock, Centering, Ball-Bearing, Automatic

F. J. Littell Machine Co., 4125-4127 Ravenswood Ave., Chicago, Ill. [Vol.74,p.845.]

A ball-bearing reel for coil stock, which can be quickly released in order to place new

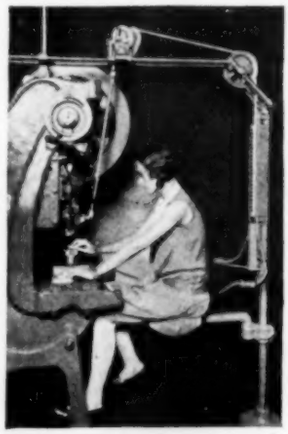
coils in position, and which can also be quickly tightened so that there is no sag or lost motion between the arms of the reel and the coil, has been placed on the market.

The ball-bearing reel will handle coils weighing up to 500 lb., with a width not exceeding 6 in., a maximum outside diameter of 40 in., a maximum inside diameter of 20 in. and a minimum inside diameter of 8½ in. The single reel can be tilted at any angle and is adjustable up and down.

Safety Device, Improved, "Possons"

Positive Manufacturing Co., 4408 Perkins Ave., Cleveland, Ohio. [Vol.74,p.34.] 108.

Features include: a visible cord and cable assembly bringing all working parts into plain view; adjustable ram-connection, and a frame attachment adjustable to both the upright and inclined positions of the press. A special hand-strap is attached to the operator's wrist and passes under his thumb. The strap is attached by a quick-release safety clip to flexible cables that are attached to a slide that operates up and down with the stroke.



Leader Pin, Demountable

E. A. Baumbach Manufacturing Co., 1812-1818 South Kilbourn Ave., Chicago, Ill. [Vol. 74,p.228.] 51.

This leader pin is for use with leader-pin die sets, and is designed to lock positively in the die shoe. It offers quick dismounting. It is fitted with three studs, a pressure spring to retain the studs, and a hollow-head, cone-point locking screw.

By turning the locking screw with a socket wrench, the pressure spring is expanded into a recess in the die shoe.

Leader Pin for Die Sets, Removable

Producto Machine Co., Bridgeport, Conn. [Vol.74,p. 962.] 383.

The pin is straight, but it is slit at one end to accommodate the expanding locking member. This member is held in place by two circular springs. The three-lobe cam is generated, each rise having a height of $\frac{3}{64}$-in. A

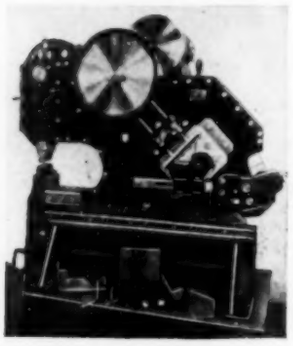
complete turn on the cam by means of a socket-head wrench gives an expansion of 0.008 in.

Punching and Shearing Machines

Punch, Shear, and Notcher, Quadruple, Universal, No. 210

G.D.S. Shearing & Punching Machine Co., 2 Lafayette St., New York, N. Y. [Vol.74,p. 34.] 26.

Direct-coupled electric motor drive is employed in the No. 210 shearing and punching machine. The machine combines the universal punch and shear with a built-in notcher. The last can



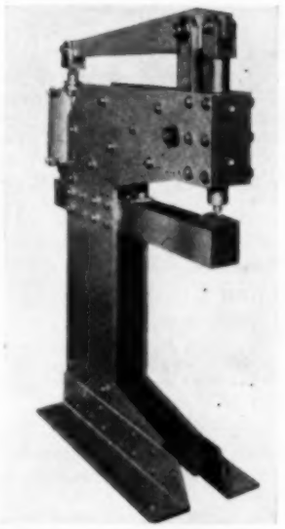
also be provided with a die stamping device, which enables square and rectangular holes to be made in the webs of channel and I-beam sections.

Four sizes are manufactured; that is, to shear plates $\frac{5}{16}$, $\frac{3}{8}$, $\frac{1}{2}$ and $\frac{5}{8}$ in. thick. The bar-cutter will handle rounds up to 1, 1$\frac{1}{16}$, 1$\frac{1}{4}$ and 2 in.

Press, Piercing, Air-Operated

Hannifin Manufacturing Co., 621 South Kolmar Ave., Chicago, Ill. [Vol.74,p.267.] 60.

An air-operated piercing press designed specifically for punching holes 1$\frac{5}{16}$ in. in diameter in $\frac{5}{16}$-in. copper boiler

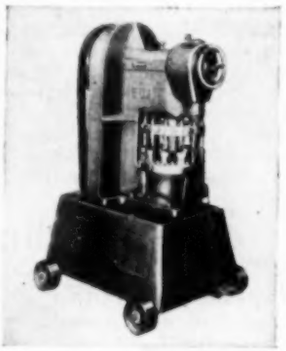


shells has been designed. The air cylinder is mounted on the back of the frame and produces a pressure of 24,000 lb. at the ram. Ram stroke is 1¼ in. and reach over the horn is 25 in. Steel construction is used extensively. The horn is a solid steel bar keyed into the frame sides and bolted. The cast-iron cylinder articulates during the stroke.

Punch, Turret, Power-Operated, Model 10-B, "Eda"

Wiedemann Machine Co., 1815 Sedgley Ave., Philadelphia, Pa. [Vol.74,p.379.] 150.

The Eda turret punch has been mounted in a power machine to punch up to a 1-in. hole in $\frac{3}{4}$-in. boiler plate. The 12 punches and dies range from $\frac{5}{16}$ to 1 in. and are interchangeable with the 8-B punch. A handwheel locates the punches as required. The model 10B

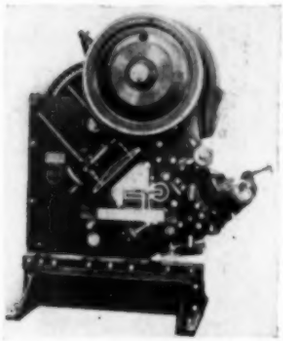


can be supplied in stationary or portable models and in belt or in motor-driven models. Depth of throat is 4½ in.

Shear, Plate and Structural-Shape

Henry Pels & Co., Inc., 90 West St., New York, N. Y. [Vol.74,p.596.] 231.

Shops fabricating welded machinery require facilities for cutting up plate and structural shapes, but often have no use for a punch. Thus, two sizes of a plate shear and structural-



shape cutter are offered for ½ and $\frac{3}{8}$ in. plate.

The plate shear has a crank and worm-operated hold-down. Rollers in the horizontal channel facilitate feeding of heavy plates. Legs of large angles can be trimmed.

Metal Cutters, Bench-Type, Nos. 00 and 118, "Gray"

W. J. Savage Co., Inc., Knoxville, Tenn. [Vol.74,p.72.] 14.

The No. 00 is a roller die-type bench cutter, whereas the No. 118 is a nibbling-type bench cutter.

The No. 00 has a cutting

mechanism consisting of a reciprocating shear blade, which operates continuously, and a horizontal shear blade, which, with the lower feed rolls, forms a three-sided die. Specifications: throat, 18 in.; capacity, ⅛ in.; stroke, ¼ in.; strokes, 350 per min.; feed, 15 in. per min.

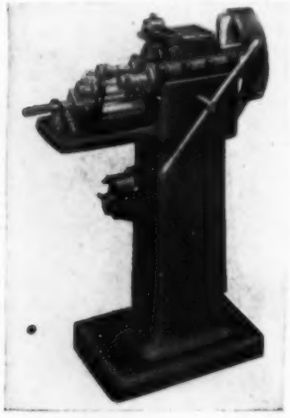
The No. 118 machine is suitable for line cutting, either straight or curved, and circular cutting. Inside cutting can also be done. Specifications: Throat depth, 18 in.; capacity, mild steel, ¼ in.; stroke, ⅜ in.; strokes, 1,200 per min.; feed, 60 in. per min.

Threading Machines

Tapping and Drilling Machine, Horizontal, Two-Spindle

United Machine Tool Corporation, 75 West St., New York, N. Y. [Vol.74,p.189.] 43.

The machine is manufactured in two types, HBG-1 and HBG-2, the former having a work holder that rotates on a short stub arbor, whereas the latter is provided with a T-slotted table upon which a swinging work holder may be mounted. The



first machine has capacity up to ⅜ in. in steel; the second, ⅝ in.

Specifications of Model HBG-1; distance between spindles, 4¾ in.; longitudinal traverse of work-holder, 7 in.; maximum distance from top of swinging work holder to spindles, 1⅜ in., minimum distance, ¼ in.; vertical adjustment of work holder, ⅞ in.

Specifications for Model HBG-2; distance from table to spindles, 7¼ in.; distance between spindles, 4¾ in.; longitudinal traverse of work holder, 14 in.; maximum distance from swinging work holder to spindles, 1⅜ in., minimum distance, 1¼ in.; vertical adjustment of work holder, ⅝ in.

Tapping Machine, Dial, Improved, No. 40

Anderson Die Machine Co., Bridgeport, Conn. [Vol.74,p. 70.] 32.

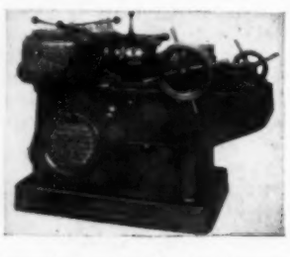
Improved spindle construction has been developed for mounting in a master plate bored to correspond with the centers of the holes to be tapped. This plate is secured to a machined portion of the slide. The spindles can be transferred from one mounting plate to another, and the time of setting up for a job is reduced. The dial and mounting plate can be stored for any job while inactive. The machine itself will drill and tap parts at the rate of 1,500 per hour.

Threading Machines, 1- and 1½-In., "Landmaco"

Landis Machine Co., Inc., Waynesboro, Pa. [Vol.74,p. 377.] 88.

Both single- and double-head models of the "Landmaco" threading machine are being manufactured in 1 and 1½-in. sizes. The 8-speed gearbox is of the selective type. The double-head machines, when equipped with leadscrews, will reverse one spindle.

The diehead is opened

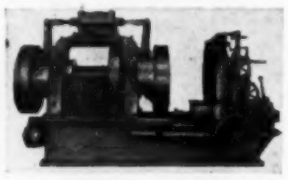


through a yoke by the forward movement of the carriage and is closed as the carriage is withdrawn. The vise has sidewise horizontal and vertical adjustment. A low-pressure, gear-type pump is connected directly to the constant-speed shaft in the gearbox and reverses automatically when the machine is reversed. When arranged for motor drive, the motor in the bed drives by chain.

Threading and Cutting-Off Machine, Pipe, with Air-Operated Chucks, 8⅝-In.

Landis Machine Co., Waynesboro, Pa. [Vol.74,p.737.] 297.

This 8⅝-in. pipe-threading and cutting-off machine is equipped with air-operated chucks. The

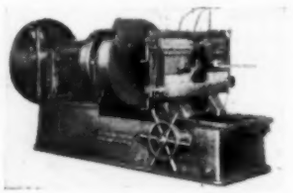


cutting-off attachment is controlled by a four-way valve, which returns it automatically to the neutral position when the operator removes his hand from the control.

Threading and Cutting Machine, Pipe, 12-In.

The Cox & Sons Co., Bridgeton, N. J. [Vol.74,p.964.] 411.

This 12-in. pipe-cutting and threading machine, arranged for either belt or motor drive, is equipped with an independent 3-jaw gripping chuck at both the front and rear ends of the spindle, and with auxiliary flange grips on the rear chuck. The



cutting head is rigidly mounted on the carriage, and the cutting-off attachment is equipped with two high-speed steel cutter knives and steady gibs.

The threading dieheads are carried in sliding rails, thus allowing them to float with the pipe. Nine spindle speeds are obtained through the gearbox at the rear.

Weight, 11,200 lb.; floor space, 5 ft. 6 in. by 10 ft.

Threading Machine for Cast-Iron Pipe, Duplex, No. 3

Baker Bros., Inc., Toledo, Ohio. [Vol.74,p.847.]

For boring, facing, threading and tapping cast-iron pipe, the No. 3 duplex cam-feed machine has a two-spindle head at each end and a special fixture and control. The unit is designed to thread diameters of 2 and 3 in. The fixture car-

riages are provided with adjustment so that pipe of different lengths can be handled, the only change necessary being in the driving bars. The tool carriage and elevating jaws are actuated by air pressure. Collapsible taps and dies are employed, so that the spindles need not be reversed.

Threading Machine, Pipe, Type 450

Speedway Manufacturing Co. Cicero, Ill. [Vol.74,p.525.] 195.

Power is furnished to the Type 450 pipe threader by means of a heavy-duty, ¾-in. electric drill removed from the machine by unscrewing two

thumb screws. The Jacobs chuck on the drill grips a steel shank protruding from a universal joint on the machine. The outfit weighs 65 lb. complete—24 lb. for the drill—and 61 lb. for the machine, but will thread up to 4-in. pipe.

Diehead, Solid-Adjustable

Landis Machine Co., Inc., Waynesboro, Pa. [Vol.74,p. 266.] 55.

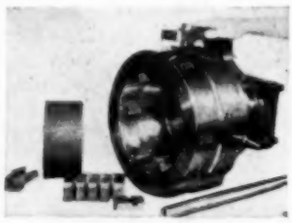
For application to special automatic machines with power feed and hand reversing mechanism as now used for threading pipe fittings and valves, this

solid adjustable diehead is offered. The tool is available in ¾-, 2-, and 4-in. sizes. The assembly consists of four major parts, all of which are made of high-carbon steel, heat-treated and ground. The diehead employs the patented Landis chaser. Adjustment for size is made by two adjusting screws that lock the dehead rigidly in place.

Diehead, Heavy-Duty, Style D, 9-In., "H & G"

Eastern Machine Screw Corporation, New Haven, Conn. [Vol.74,p.884.] 364.

This special diehead is made for threads of the following diameters: 6½, 6¾, 8⅛ and 8⅞ in., all being 4 threads per in. and of the American-National



Thread form. The diehead weighs 325 lb., is 14½ in. in diameter, but is only 10 in. in over-all length, not including the shank. The six chasers used weigh 9 lb.

Tap, Collapsible, Combination, Special

Geometric Tool Co., New Haven, Conn. [Vol.74,p.561.]

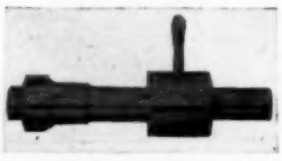
For cutting two diameters simultaneously, the tool illustrated is known as a 3-in. and 4-in. Class "SD" tap, being equipped to cut 3⅛ and 4⅛ in.,

12 U.S.S. threads per in. The chasers engage with the work simultaneously or at such points as to permit the chasers to finish threading at the same time. The pitch must be the same.

Tap, Valve-Seat, Victor

Landis Machine Co., Inc., Waynesboro, Pa. [Vol.74,p. 740] 281.

The Victor valve seat tap is fitted with double-ended chasers, one end for each of the two valve-seat ring threads. The chasers, when collapsed, will clear the port openings. They are expanded to the cutting position by means of a handle. The two threads are tapped in one chucking. The tap is suitable for valves with either parallel or angle seats.

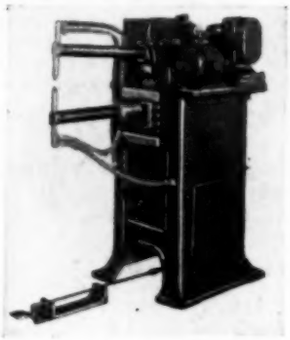


Welding and Shape-Cutting Machines

Welding Machine, Spot, Automatic, "Standard"

Lenney Machine & Manufacturing Co., Warren, Ohio. [Vol.74,p.267.] 85.

Automatic spot welders in 20- 25- and 33-kva. capacities have been announced. The drive is on top, with all mechanism mounted on the base. Floor



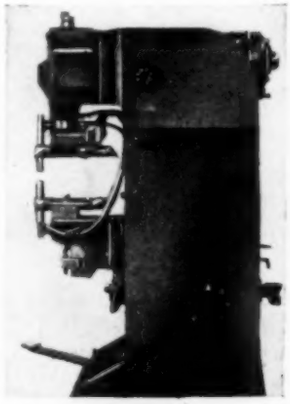
space is the same as for foot-power machines of the same capacity.

Power is supplied by a ½-hp. motor controlled by a treadle. Five speed changes, from 45 to 140 r.p.m., are incorporated. Current regulation is by means of an auto coil with eight steps.

Welding Machine, Spot and Projection, No. 2

Federal Machine & Welder Co., Dana Ave., Warren, Ohio. [Vol.74,p.483.] 186.

Main housings are fabricated of structural steel, saving 1,500 lb. over the previous design. The variable-stroke head covers requirements of heavy and light

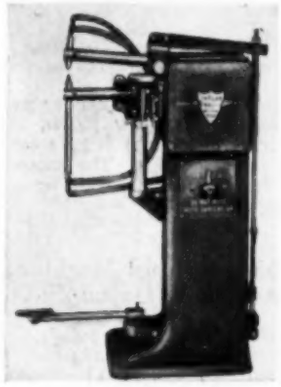


material. A dial control governs the four-speed motor. An eight-position rheostat gives 60-per cent speed variation in eight equal steps. The adjustable knee with special universal horns may be swung in any position. The spot welds ranges from 15 to 130 per min.

Welding Machine, Spot

Taylor-Hall Welding Corporation, Worcester, Mass. [Vol. 74,p.524.] 206.

The four sizes are: the 7½-kw. machine with straight horns, the 7½-kw. machine with adjustable swinging horns, and 12-kw. machines in either type. The upper and lower horns may be adjusted to a minimum distance of 2¾ in. The lower horn has a vertical adjustment of 10 in., and may be used as a swing-

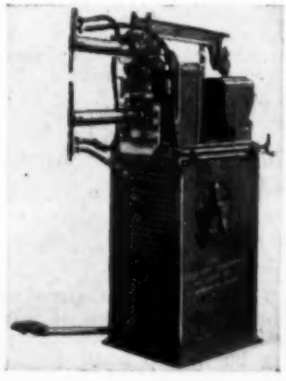


ing arm when welding deep boxes. Die clamps are quickly removed. The length of horns is optional from 8 to 24 in. The welding range for the first size is two pieces of flat steel ⅛ in. thick and for the last size two pieces ¼ in. thick.

Welding Machine, Spot, Production, "Joule"

Federal Machine & Welder Co., Dana Ave., Warren, Ohio. [Vol.74,p.848.] 299.

This production-type spot welder may be either foot or power operated, or both. It is of all-welded steel construction and employs a fulcrummed swinging arm. When power driven, the machine with minimum throat, maximum transformer and slow speed will weld two pieces of ½-in. ma-



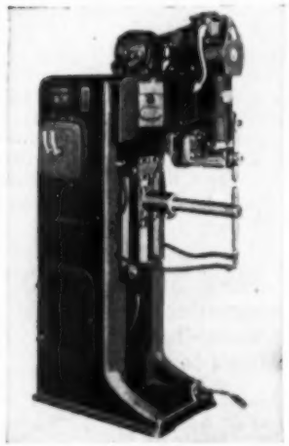
chine steel. Material from 20 to 11 gage can be handled.

Width of the machine is 18½ in. and the height, 50 in. Throat depths from 10 to 24 in. may be obtained. Capacities range from 10 to 20 kw. Speeds are 60, 90, 120 and 180 welds per min.

Welding Machine, Spot and Projection, No. 1

Thomson-Gibb Electric Welding Co., Bay City, Mich. [Vol. 74,p.958.] 376.

The machine has a straight-spindle, press-type action, which adds to the life of the welding electrode. All bearings are either Hyatt, Timken, or ball thrust. The driving mechanism consists of a motor and a worm reduction and clutch unit. Roller chain drive is employed. The transformer gives sixteen

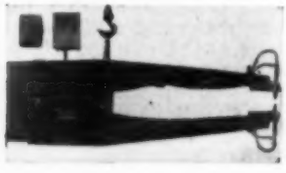


variations of welding heat. Welding pressures up to 900 lb. can be had. Speeds of 30 to 160 spots per min. are available. The machine can be furnished in either 12, 18, or 24-in. throat depths and may be powered with a 20, 30, or 40 kva. transformer.

Welding Machine, Spot and Arc

Electric Arc Cutting & Welding Co., 152 Jeliff Ave., Newark, N. J. [Vol.74,p.999.] 387.

The "Electric Blacksmith" has a throat depth of 48 in., and may be transported about the shop for fabricating work. It can be suspended from a trolley or jib crane or placed on a welded pedestal. Capacity is two pieces of ⅛-in. steel for spot welding, or up to 200 amp. for arc welding. The change from one operation to the other is made by throwing a switch.



Welding Machine, Resistance, "Electroweld"

Electric Arc Cutting & Welding Co., 152 Jeliff Ave., Newark, N. J. [Vol.74,p.963.] 388.

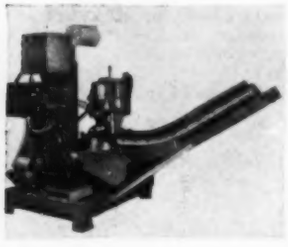
Arc-welded resistance welders in two sizes have been developed. The type R welder is of 15 kw. capacity and the type J of 20 kw. capacity. The smaller ma-

chine has heat control at the top of the casing. Capacity is two thicknesses of 18 gage, and throat depth is 12 in. The type J machine has alligator motion for the tips. Capacity of this unit is two thicknesses of No. 6 gage, and the throat depth is 24 in.

Welding Machine, Automatic, for Automobile-Starter Frames

Lincoln Electric Co., Coit Road & Kirby Ave., Cleveland, Ohio. [Vol.74,p.302.] 6.

Approximately 240 automobile starter frames per hour can be welded on this automatic machine. This unit embodies the principle of the shielded arc and utilizes the "Electronic Tor-

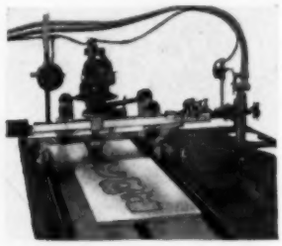


nado" process. The starter and generator frame is usually made of $\frac{1}{16}$- or $\frac{3}{8}$- in. plate cut to size and shape, punched and rolled into cylinders, and arc welded. These cylinders are fed into a gravity conveyor, and guided automatically to keep the seams on top. At the bottom of the conveyor, they pass between rolls which squeeze the seams together tightly as they pass under the arc. No filler rod is required. One man and a helper can operate four machines simultaneously. The welds are of high tensile strength and pleasing appearance, with flush beads.

Shape-Cutting Machine, Portable, Type K-O, "Geweco"

General Welding & Equipment Co., 70 Lansdowne St., Boston, Mass. [Vol.74,p.229.] 41.

This machine runs on a track and can be employed for exceptionally large jobs, where a fixed machine of large capacity could not be afforded. It is also



suitable for small-quantity production of narrow pieces. It, therefore, fits the requirements of jobbing shops. The capacity is from 1 to 2 ft. wide by any length.

Shape-Cutting Machine, "American Oxycop"

Bradley Machinery Co., 430-32 East Woodridge St., Detroit, Mich. [Vol.74,p.450.] 121.

Ordinary city gas is used without a booster on the "American Oxycop" flame cutting machine. This machine is especially suitable for toolroom use in roughing out press tool

dies. The shape to be cut is reproduced from a drawing placed on the table, but where production runs are expected on parts, a templet tracer can be had, together with guide strips. The speed of cutting is 1 ft. per min., and in the model illustrated the cutting area is 18x 18 in.

Shape-Cutting Machine, "Cleancut"

Jos. C. Paulus & Co., 2507-9-11 Potter St., Philadelphia, Pa. [Vol.74,p.669.] 260.

The machine is designed to meet the requirements of firms demanding clean, accurate cutting but in too small quantity

to warrant the purchase of more expensive machines or where current is not available. The guide is geared 48 to 1 so that it is possible to move the torch with a sufficiently even motion to produce a clean cut. The torch is the low-pressure injector type, and has a round-ring preheating flame.

Shape-Welding Machine, Universal, with Arc-Welded Head, "Geweco"

General Welding & Equipment Co., 70 Lansdowne St., Boston, Mass. [Vol.74,p.448.]

A series of shape-welding machines to guide electric arc-welding heads automatically

over any regular or irregular line has been announced. The machine illustrated employs a Lincoln "Tornado" head for welding heads in tanks. The speed of welding $\frac{1}{16}$-in. stock, or $\frac{1}{4}$ in. at the top edge, is 25 in. per min.

Welding Control, "Thyratron"

General Electric Co., Schenectady, N. Y. [Vol.74,p.845.]

Intermittent line and spot welding with interruptions as high as 1,000 per min are possible with Thyratron control equipment. The control con-

sists of two essential parts: the series transformer and a control panel. On the control panel are mounted two hot-cathode thyratrons, the filament transformers, grid transformer, time-delay relay, and the necessary resistors and capacitors. The entire panel is inclosed.

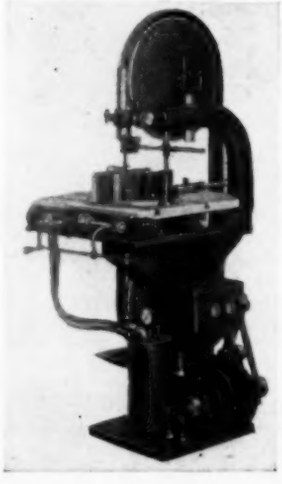
Other Machines

Bandsaw, Metal-Cutting, with Hydraulic Feed, Type JM

William Laidlaw, Inc., Belmont, N. Y. [Vol.74,p.741.]

A low-pressure hydraulic feed has been applied to the Type JM metal-cutting bandsaw. The stationary cylinder is mounted between the carriage and the table, the piston rod being directly connected to the latter. Oil is returned to the reservoir through an adjustable needle valve.

The work table measures 26x 26 in. The 8 speed changes range from 100 to 725 ft. of saw travel per min.



Bandsaw, Bench, No. 14

Heston & Anderson, Fairfield, Iowa. [Vol.74,p.920.] 395.

Several improvements have been made in this model. It clears 12 in. under the guide

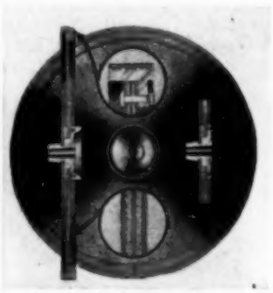
and 13¾ in. between the blade and frame. Ordinarily, the frame sets on the bench, but can be supplied with a table for floor use.

The rubber-covered wheels are 14 in. in diameter with 1 in. face, and are balanced. The upper wheel has a spring arrangement for maintaining the proper tension on the blade, adjustment being by setscrew. By means of a graduated plate the table can be tilted 45 deg. to the right and 5 deg. to the left. It measures 14x14 in. and has a 5½x8-in. side table attached. The throat plate is of aluminum and is easily removable.

Bandsaw Rim, Demountable

Oliver Machinery Co., Grand Rapids, Mich. [Vol.74,p.74.]

This demountable rim for bandsaws may be changed rapidly, or the rubber-faced aluminum rim only may be demounted quickly. The wheel

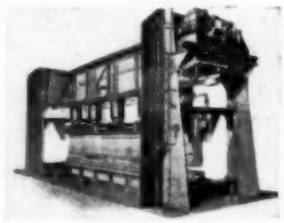


can be mounted only on an 26-in. bandsaw. The steel-clad, 5-ply laminated disk wheel is balanced to afford smooth running. The rubber tire is ground to a circle and is vulcanized on a hard rubber base.

Brake, Bending and Forming, Plate, Hydraulic

Watson-Stillman Co., Roselle, N. J. [Vol.74,p.956.] 382.

Features of the brake are speedy operation, a large range both for shape and size of the work, sensitive control of speed, and low maintenance cost. The



steel frame can be either welded or riveted. The large open ends allow endwise removal of the finished piece and also make possible the bending of pieces longer than the bending die. Dimensions of the end opening and the length of the bed can be varied.

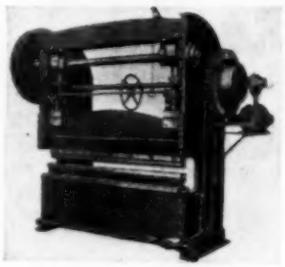
The bending beam is held in alignment with the base by means of a parallel-motion arrangement, and is operated by hydraulic cylinders controlled simultaneously by one valve.

The brake is being offered in 250, 500 and 1,000 ton capacities.

Brake, Sheet-Metal, Arc-Welded

Dreis & Krump Manufacturing Co., 74th St. and Loomis Blvd., Chicago, Ill. [Vol.74,p. 958.]

The machine is built entirely of steel, arc-welded. A deep gap permits work longer than the die length to be passed through the machine from right



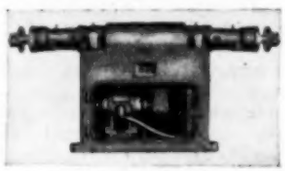
to left. The ram is in one piece with a loose clamping bar for quick changing of tongued dies.

The bed is built of two plates with a 1½-in. standard spacing between plates to permit multiple punching with an inexpensive punching arrangement.

Buffing and Polishing Machines, "Texdrive"

Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.74,p. 449.] 128.

Unit spindle-head construction is employed in the 10- and 15 hp. "Texdrive" buffing and polishing machines. The motor

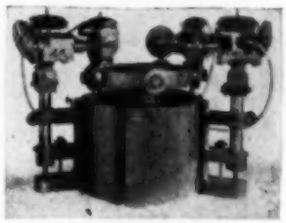


is ball-bearing equipped and is mounted on a dovetailed sliding base to secure proper belt tension. The spindle head is mounted on four ball bearings, but Timken roller bearings are optional. Length of the spindle over-all is 82 in.; length of spindle projections each end, 15 in., and net weight, 2,600 lb.

Buffing and Polishing Machine, Automatic, "Universal"

Hammond Machinery Builders, Inc., Kalamazoo, Mich. [Vol.74,p.630.] 239.

Whether the work to be polished is round, flat or beveled, means are incorporated in

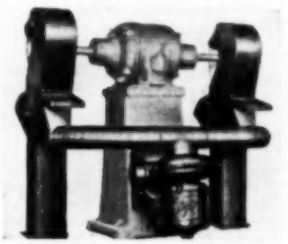


the machine so that the desired finish may be obtained. The table is indexed to stop at each polishing head, while at the operator's station on automatic clutch stops the revolving fixtures to prevent injury. Spring balances on the heads permit any predetermined pressure or yield to be obtained. The polishing wheel spindles are driven by multi V-belts.

Exhauster Equipment for Buffing Machines

Hisey-Wolf Machine Co., Cincinnati, Ohio. [Vol.74,p.964.] 279.

This motor-driven exhauster blower for use with buffing and polishing equipment is mounted integral with the machine as

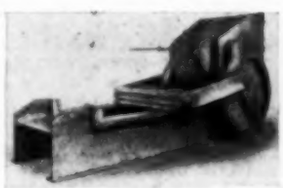


shown, and the same automatic motor starter simultaneously controls both motor units. The equipment also includes a dust-collecting hood. It is supplied for all sizes of buffing and polishing machines from ½ to 5-hp.

Bulldozers, "Battleship"

Steelweld Machinery Co., Cleveland, Ohio. [Vol.74,p. 381.] 144.

Welded steel-plate construction is employed in this line of "Battleship" bulldozers. All gearing is of steel with cut teeth. Drive is by means of cog-belts. Through the steel ram is welded a solid shaft so

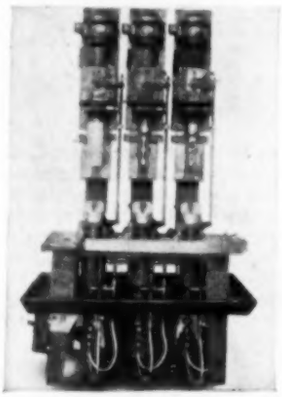


that trouble from broken end lugs is eliminated. Timken bearings are employed in the flywheel and the high-speed shaft. The main clutch is of twin-disk design. Reversing clutches are standard in the larger sizes.

Capscrew Machine, Second-Operation, Semi-Automatic

Langelier Manufacturing Co., Providence, R. I. [Vol.74,p. 340.] 62.

Squaring up under the head and rounding the end of nickel-steel capscrew blanks can be done on this semi-automatic machine, arranged to accommo-



date screw blanks from ¾ by 1 in. to ⅞ by 6 in.

Three Langelier No. 21 automatic motor-driven units are mounted vertically on individual columns. Each unit is equipped with a special tool having inserted cutters capable of being adjusted. The work is held in a pneumatic two-jaw chuck having suitable inserts to grip the head of the screw and allow sufficient projection for the squaring operation.

Capscrew Pointing Machines, Automatic, ½- and ¾-In.

Economy Engineering Co., Willoughby, Ohio. [Vol.74,p. 738.] 278.

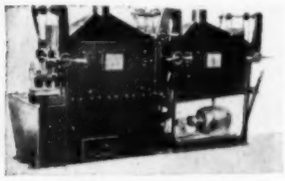
The Type B ½-in. machine will point bolts and cap screws of ⅛ to ½ in. and any length from ¾ to 4 in. Operation of the machine is fully automatic. Pieces are delivered at the rate of 2,000 to 3,000 per hour. One operator attends five machines. Either belt or motor drive can be furnished.

The Type BA ¾-in. machine gives production of 1,800 to 3,500 pieces per hour. Bolts or capscrews from ¼ to ⅞ in. and from 1 to 6 in. in length are handled.

Cleaning Machine, Cylinder-Block, "Ideal"

N. Ransohoff, Inc., Cincinnati, Ohio. [Vol.74,p.31.] 23.

The cylinder block enters a vapor-tight chamber where it encounters an automatic stop. From nozzles Oleum spirits are sprayed onto and into the cast-



ing to loosen all grease, oil, dirt, chips and other foreign matter. The block travels into the next compartment, where a second series of nozzles, similarly placed, direct air into and over the casting, removing the loosened dirt and such excess spirits as may remain in pockets in the casting.

Countersinking Machine, Nut, Duplex, 1-In.

Kent Machine Co., Cuyahoga Falls, Ohio. [Vol.74,p.415.] 154.

Both ends of the hole in nuts from ¼ to 1 in. are countersunk automatically on this duplex machine. One hopper feeds both sets of countersinking

spindles. Provision is made for adjustment to give the desired depth of countersink, irrespective of the thickness of the nut. The spindles and working parts are controlled by one camshaft. Each set of countersinking spindles makes 60 reciprocations per minute, giving a possible production of 7,200 nuts per hour. The machine is motor driven.

Cut-Off Machine, High-Speed

Cincinnati Electric Tool Co., Division of the R. K. LeBlond Machine Tool Co., Cincinnati, Ohio. [Vol.74,p.29.] 7.

Alloy steels and non-ferrous metals in various angles and shapes up to 2¼ in. can be cut off on this high-speed, abrasive cut-off machine. The wheel is either 12 or 14 in. in diameter

by $\frac{3}{32}$ in. thick by 1 in. bore, and operates at 15,000 s.f.m.

A 7½-hp. ball-bearing motor furnishes drive. The wheel head is mounted on a swivel arm, which pivots on the pedestal and is balanced by the weight of the motor in the rear. The machine is suitable for making straight cuts or angle cuts up to 45 deg. Material to be cut is held in the vise by pressure on the foot lever.

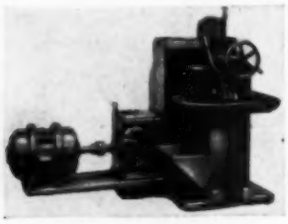
Height, 60 in.; floor space, 43½x26 in.; weight, 1,250 lb.

Cut-Off Machine, High-Speed, No. 21

Cochrane-Bly Co., Rochester, N. Y. [Vol. 74, p. 265.] 74.

An abrasive wheel, a friction disk, or a saw blade can be employed on this machine. The spindle is mounted on Timken roller bearings, whereas the heavy carriage is mounted on ball-bearing ways. A lever is employed for moving the carriage forward.

The machine can be speeded



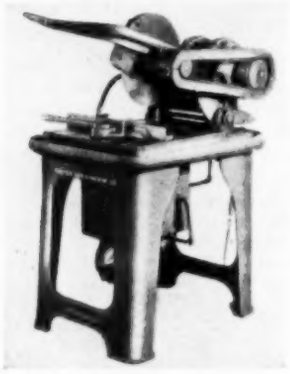
to compensate for wheel wear. Drive from the speedbox to the spindle is by means of multiple V-belts. Either wet or dry cutting may be employed.

Specifications: capacity, round stock, 4 in.; diameter of abrasive wheel or saw, 16 in.; speed range of spindle, 800 to 6,000 r.p.m.; floor space, with belt drive, 38x40 in.; and motor required, 5 to 15 hp.

Cut-Off Machine, Metal, High-Speed, No. 6

Hunter Saw & Machine Co., Pittsburgh, Pa. [Vol.74,p.339.]

Light-section steel tubes and shapes can be cut off on the No. 6 high-speed metal cut-off saw. The 6A machine is designed for cutting brass and copper solids, shapes and tubing. The No. 6B machine is designed for cutting aluminum bars, shapes and tubing, and has a higher peripheral speed for the saw. Saws of any diameter from 10 to 18 in. can be used. The motor and saw arbor are mounted on opposite ends of a

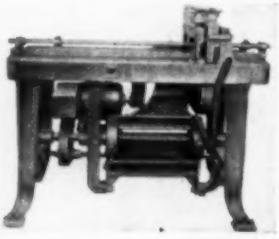


balanced swing frame, and the saw blade is driven by V-belts. By means of an offside hand lever the saw blade is pulled through the material.

Cut-Off Machine, Model 30

Andrew C. Campbell, Inc., Bridgeport, Conn. [Vol.74,p. 958.] 394.

The Model 30 machine handles materials up to 1 in. thick and 16 in. wide at the rate of 2 to 12 seconds per cut. The travel arm for the cutting disk

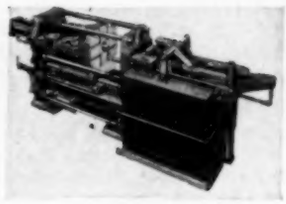


is arranged so that the spindle travels parallel to the top of the table without the use of slides. The motor is started and stopped by a push button located conveniently. Welded steel guards protect the operator. Six V-belts furnish drive.

Die-Casting Machine, Hydraulic, No. 7F

Reed-Prentice Corporation, Worcester, Mass. [Vol.74,p. 921.] 351.

The machine is now hydraulically operated throughout. Operating links are made of cast steel bushed with hardened bearings and having facilities for lubricating. The die plates are machined with T-slots, allowing the die to be mounted quickly in position. An automatically operated hydraulic cylinder can be furnished for ejecting the castings from the



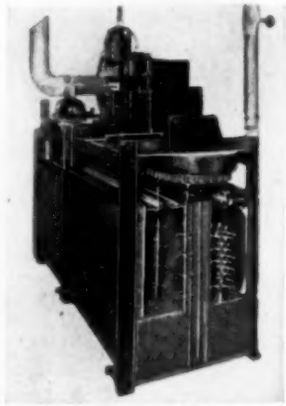
dies. Automatic removal of cores during the opening stroke of the machine can also be provided for.

Specifications: Die opens, 8 in.; maximum die space, 17 in.; minimum die space, 6 in.; between bars, 16½x12 in.; shots per hour (average), 250.

Drying Machine, Conveyor-Type

Metalwash Machinery Co., Inc., 117-119 East 24th St., New York, N. Y. [Vol.74,p.1002.] 431.

Automatic drying of metal parts coming from cold or hot rinse tanks is taken care of in this low-heat continuous drying machine. Two drying chambers provide for either hot or combination cold and hot blast

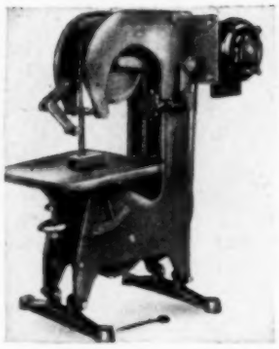


drying. Advantages are: the drying method prevents tarnishing of the material; the metal parts can be handled immediately after leaving the dryer; there is no steam exhaust or gas fumes, and last, should the operator leave the machine the work travels through the dryer again without harm. The overhead, single-chain, return conveyor carries the work through the blast tunnels, entering at the left and returning at the right.

Filing Machine, Bench, Continuous, Model B-1

Grob Brothers, 90th and National Aves., West Allis, Wis. [Vol.74,p.522.] 205.

This bench-type, continuous-band filing machine is designed for either external or internal filing and is suited to tool and die making. Flat surfaces up to 4 in. in height can be finished within close tolerances. Features include: automatic tension to the main driving belt; positive drive to the file chain; full-

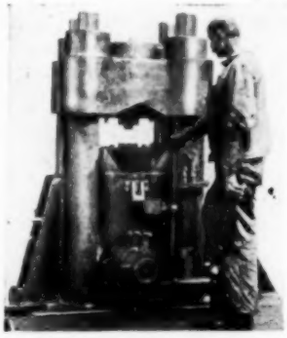


support back rest; positive adjustment to the work table; three filing speeds. Filing chains can be furnished either flat, half round, or diamond shape. The work table can be adjusted 25 deg. either forward or backward.

Forging Presses, Schuler

J. I. Bernitz, 47 West St., New York, N. Y., and 11 Wellington St., East Toronto 2, Canada. [Vol.74,p.736.] 292.

These low-headroom forging passes are designed for hot forging ferrous or non-ferrous metals and alloys, but can also be used for cold pressing or other stamping. Capacities are 300 and 500 tons, and height above the floor is less than 7 ft.



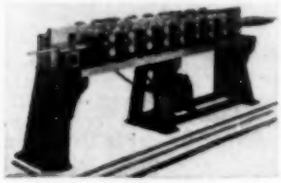
Power from the underneath shaft is directly transmitted by a cylindrically mounted barrel to pillow blocks. Shut height is adjustable within wide limits.

The 500-ton press runs at 48 strokes per min., and requires 20 hp. for operation. The maximum pressure can either be spread out over a long working stroke, or the press can deliver this pressure on a very short stroke only, as double gearing is provided. Strokes are 5¼ in.

Forming Machine, Cold-Roll, 11-Stand

Kane & Roach, Inc., Syracuse, N. Y. [Vol.74,p.773.]

The main frame is made long enough to take eleven stands. The machine is of standard construction, having 1½-in. shafts, 4¼-in. rolls on 8-in. center distance, and a roll space on the shaft of 6 in. Outer bearings of the quickly removable type are mounted on the guide-support platform. Close adjustment of the starting guides to



align stock with the first set of rolls is provided. Forming rolls have the shearing edges designed to allow grinding the faces and returning them to the proper position.

Heater, Bar, One-Electrode, No. 4, Type E, "Berwick"

American Car & Foundry Co., 30 Church St., New York, N. Y. [Vol.74,p.33.] 12.

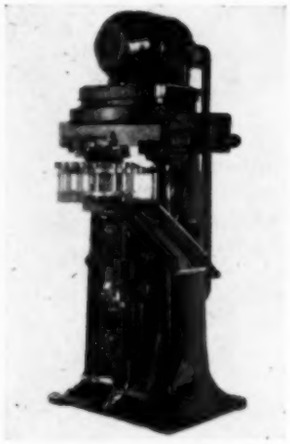
This heater employs four points of contact, the material resting on the lower electrode, and being grabbed by overhang-

ing jaws of a parallel electrode. End heating or any length of heat desired can be obtained at any spot on the bar or rod, the length of heating being approximately 8 in. This can be varied. The heater as constructed, will heat any diameter from ¾ up to 2 in.

Marking Machine, Hydraulic, with Disk-Feed, No. 12

Martin Machine Co., Inc., Turners Falls, Mass. [Vol.74, p.299.] 86.

This disk-feed valve marking machine revolves the disk by the action of the table cylinder that operates the machine. Valves are inserted at the front and twirled out on the right-hand side by a cam. Production is approximately 50 valves per min. The machine will mark uniformly even though the valves vary in thickness. The disk rests on a ball-bearing thrust collar and has a hardened anvil.



Nut Setter, Bench-Type

R. G. Haskins Co., 4636 West Fulton St., Chicago, Ill. [Vol. 74,p.376.] 109.

For setting small screws and nuts, the Type CBF bench machine employs a standard motor clutch and adjustable tensioning device. The motor is of

the split-phase induction type. Combined radial and thrust ball bearings, fitted with grease retaining devices, are employed. Gears are entirely inclosed in a grease-packed housing. A quick-acting chuck is applied. The unit is counterbalanced on knife-edge bearings.

Nut Setter and Screw Driver, Bench-Type, Electric

R. G. Haskins Co., 4636 West Fulton St., Chicago, Ill. [Vol. 74,p.850.] 354.

Type BH is for mounting on top of the bench. Vertical adjustment is provided, and the

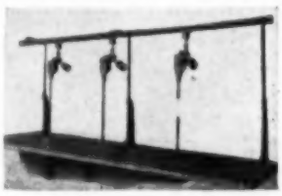
unit can be swiveled and locked at any angle in either a horizontal or a vertical position. Type B1 enables the unit to be mounted under the bench and in a vertical position. The unit is held in a split ring. Only the bit, wrench or other tool projects above the top of the bench.

Either unit is suitable for driving No. 10 machine screws.

Screwdriver Mountings

R. G. Haskins Co., 4636 West Fulton St., Chicago, Ill. [Vol. 74,p.886.] 355.

The type RBF bench mounting has power supplied to the tool through current-collecting strips inclosed in a rigid steel trolley rail. A ball-bearing trolley supports the counter-



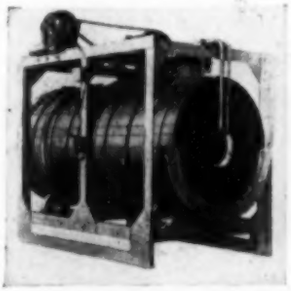
balanced ball-bearing swiveled bracket, from which the standard unit is suspended on a universal coupling. This type of mounting is designed to facilitate driving screws and nuts over an extended area in assembly work that is constantly moving.

For assembly operations performed on benches attached to side walls the type RWF mounting is available. A type RCF mounting also is available, in which the rail supports are fastened directly overhead to the ceiling, giving a clear working space.

Plating Barrel, Automatic, "Ideal"

N. Ransohoff, Inc., Cincinnati, Ohio. [Vol.74,p.264.] 18.

Automatic loading and unloading of the "Ideal" automatic plating barrel permits it to be readily introduced into an auto-



matic batch cleaning and plating assembly. It consists of a drum of 3-in. maple divided in the middle section by a diaphragm of rubber-covered steel. Anodes and cathodes are suspended from two bars which extend into the barrel.

The diaphragm is so arranged that when rotating in one direction the work is held in the plating chamber, and gently agitated in the plating solution. When the barrel is rotated in the opposite direction, the work is automatically thrown into a Formica screen, the excess solution drained off, and the work discharged.

Plating Machine, Return-Type, Automatic

Frederic B. Stevens, Inc., Detroit, Mich. [Vol.74,p.521.]

An electrolytic plating or treatment process can be carried out in this machine. All moving parts are carried by a structural steel support. The brackets are hinged and have copper arms for supporting the

work. These carrier-arm brackets may be spaced at 12, 18 and 24 in. on the conveyor chain. Raising and lowering transfer units are attached to the steel channels. Carriers arms are equipped with both anodic and cathodic contacts. Ventilation is provided. Machines up to 40-ft. long are shipped as a unit, and require piping and electrical connections.

Polishing Machine, Metallographic-Specimen, Automatic

The Chemical Rubber Co., Cleveland, Ohio. [Vol.74,p.32.]

Polishing of metallographic specimens on this automatic machine does not depend upon the operator's ability. The machine consists essentially of a polishing disk mounted horizontally and belt driven by a ¼-hp. motor at 400 r.p.m. An eccentric gear drives the specimen holders, of which there are three, in such a way that the specimen is slowly moved back and forth along the radius of the turning disk. At the same time the specimen is rotated slowly, so that the direction of polishing is changed continually.

Polishing Machine, for Metallographic Specimens

American Instrument Co., Inc., 774 Girard St., N.W. Washington, D. C. [Vol.74,p. 488.] 161.

Three specimens for metallographic investigation are polished automatically by the "Aminco" polishing machine.

The polishing head is covered with a suitable cloth and is mounted on a vertical spindle driven by belt from the motor below. Specimens are held tightly against the cloth. Besides rotating on their axis, these holders oscillate toward and away from the center of the disk.

Riveting Machines, Rotary, Vibrating, Nos. 2-, 3-, 4-, and 5A

Grant Manufacturing & Machine Co., 90 Silliman Ave., Bridgeport, Conn. [Vol.71,pp. 262, 375, 558 and 704.] 92.

All machines of this line have the same features. The No. 2A (p. 704) will head rivets cold from $\frac{3}{32}$ to $\frac{7}{32}$ in. at 1,500 to 2,000 blows per min.; the No. 3A (p. 558) heads rivets from $\frac{7}{32}$ to $\frac{5}{16}$ in. at 1,400 to 2,000 blows per min.; the No. 4A (p. 375) heads rivets from $\frac{3}{8}$ to $\frac{1}{2}$ in. at 1,500 to 1,800 blows per min.; and the No. 5A (p. 262) heads rivets up to $\frac{5}{8}$ in. at 1,200 to 1,500 blows per min.

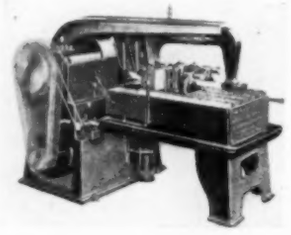
The hammer spindle is rotated clockwise by a worm drive and the riveting tool is threaded to the spindle. The main shaft at the rear carries an eccentric bearing that gives the reciprocating motion to the spindle. Special tables and fixtures can be substituted for the standard table.

Sawing Machines, Hydraulic

Racine Tool & Machine Co., Racine, Wis. [Vol.74,p.629.]

Shear-cut hydraulic production swing machines are manufactured in 10x10, 12x12, and 10x16-in. sizes. Each incorporates the "Oilmotor." The amount of feed is set by the operator for different kinds and sizes of stock and the oil volume increases or decreases slightly in accordance with the area and character of metal encountered by the blade.

The feed, lift, clutch, and



rapid traverse of these machines are all hydraulically operated. The entire control is had through a single lever at the front. A 3-speed geared head is another feature.

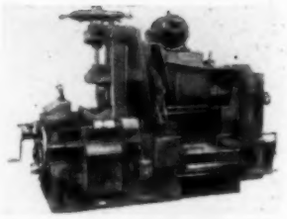
Sawing Machine, Cold, Type S-HS

Heller Machine Co., 25 Church St., New York, N. Y. [Vol.74,p.998.] 406.

This fully hydraulic cold metal sawing machine is being offered in five sizes ranging in capacity from 5- to 18-in. rounds. Drive is through a single pulley with motor mounted on the saw carriage, and complete control is centralized at the front of the machine.

The carriage feed ranges from 0 to 20 in. per min. Adjustable knock-offs disengage the feed and return the carriage by rapid traverse. The blade cuts upward through the stock, and thus throws the stress of cutting downward into the heavy bed section.

The vertical work clamp is hydraulically operated. The front or horizontal clamping vise can be arranged either for



mechanical or hydraulic operation. The stock-moving mechanism is operated hydraulically.

Saw Setter, Automatic

Carpenter Tool Co., Barrington, R. I. [Vol.74,p.222.] 21.

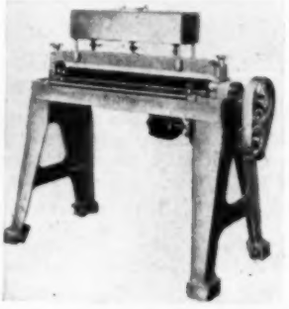
Hand, band, and circular saws having 3 points per in. and smaller can be set automatically on this saw setting machine.

Bandsaws up to 2 in. in width, and circular saws up to 20 in. can be handled. Maximum circular saw thickness is No. 14 gage.

Sheet Oiling Machine

F. J Littell Machine Co., Chicago, Ill. [Vol.74,p.920.] 371.

Sheets up to 36 in. wide and not exceeding No. 12 gage can be oiled on this power oiling machine. A wiper removes the



excess oil from the sheets. A ½-hp. motor, in connection with a reducer, is used to feed the sheets at a rate of 100 ft. per min.

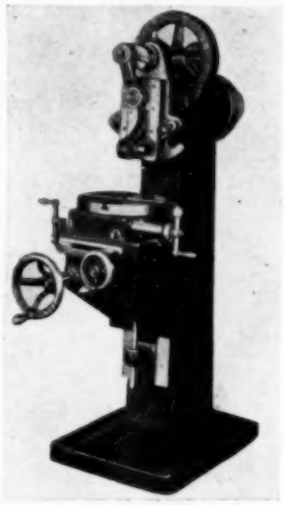
Slotter, Vertical

John B. Stevens, Inc., 304 Hudson St., New York, N. Y. [Vol.74,p.445.] 184.

This vertical machine is adapted to die work, keyseating (both straight and taper) inter-

nal and external gear patterns where draught is required. The rotary-table worm shaft is arranged with a dial graduated in minutes. Micrometer dials are used on the screws for longitudinal, cross and knee movements. The ram slide can be swiveled 5 deg. to either side.

Specifications: Diameter of



table, 12 in.; vertical adjustment of table, 11½ in.; adjustment in line with spindle, 5½ in.; adjustment across line of spindle, 7 in.; column face to tool center, 9¼ in.; floor space required, 28x44 in., and weight, 1,150 lb.

Straightening Machine, "Armor Plate"

Buffalo Forge Co., Buffalo, N. Y. [Vol.74,p.699] 253.

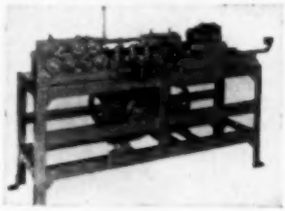
The machine is designed for straightening axles, rails, beams, channels, tees and similar sections, and is designed along the lines of horizontal punches. The lower pressure blocks are ad-

justed by means of a handwheel and move in unison, to assure equal spacing at all times. The carriage is graduated and is adjusted by means of a large handwheel. Operation of the machine is continuous.

Straightening, Measuring, and Cutting-Off Machine, Automatic,

Artos Engineering Co., 119 Brown St., Milwaukee, Wis. [Vol.74,p.187.] 50.

After the type TC machine takes the end of a coil of copper tubing in the feeding rollers, the operations of feeding, straightening, measuring, and cutting off are automatic. The feeding speed is about 50 ft. per min., but the actual produc-



tion is dependent on the length of pieces to be cut. The machine is adjustable for any cutting length up to 6 ft. An attachment trims the first end of the coil automatically.

Straightening and Cutting Machine, Wire, Automatic, No. 8-C

Lewis Machine Co., 1592-1600 East 24th St., Cleveland, Ohio. [Vol.74,p.852.] 362.

Features of this machine are: The quick-action cut-off, reducing the cutting time to ⅛ revolution of the flywheel;

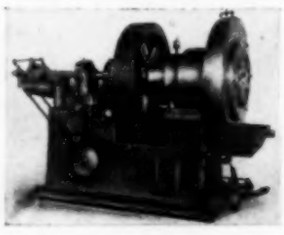
three-speed transmission, seven-die straightener arbor with variable die spacing; independent adjustment of the straightener rolls; Timken roller bearings; and built-in motor drive.

Swaging Machine, Semi-Automatic, Die-Opening

Langelier Manufacturing Co., Providence, R. I. [Vol.74,p.300.] 96.

A machine for automatically compressing the pocket end of copper terminals onto the ends of insulated flexible wire cables by the rotary swaging process has been developed. Dies and spring collets for swaging eleven sizes of terminals are provided; that is, for No. 1-GR to No. 12-GR leads.

Two types of terminals can be swagged onto the cable, one being a plain cylindrical copper tube, the blade end being formed after the swaging operation is completed. In the

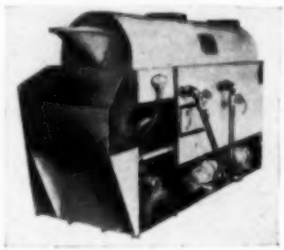


other type, the blade of the terminal is completely formed before being swaged. Two speeds are provided, one to give an output of 9 per min. for the small terminals, and the other of 6 per min. for the large terminals.

Washing and Drying Machine for Metal Parts, Rotary-Drum,

Metalwash Machinery Co., 117-19 East 24th St., New York, N. Y. [Vol.74,p.668.] 249.

This completely automatic washing, rinsing and drying machine is a rotary-drum type, and is for removing grit, dirt,



oil, foreign liquids and chips from screw machine parts, stampings and small castings. It is used before or after plating, burnishing, or acid dipping and for cleaning before paint finishing.

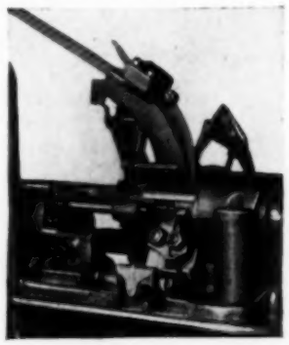
The machine will clean and dry 100 to 240 cu.ft. of material per 8-hr. day. It occupies 40 sq.ft. of floor space and stands 5½ ft. high.

Woodscrew Machine Attachment

Asa S. Cook Co., Hartford, Conn. [Vol.74,p.228.] 77.

The attachment is made in three models designed to fit the Nos. 1, 2, and 3 machines, which will thread all the common sizes of woodscrews. Through its use, stainless-steel screws may be turned out on a commercial basis.

Two threading tools are em-

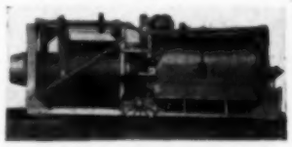


ployed instead of one. The tools operate simultaneously on adjacent thread grooves and are so positioned that each removes about half the metal. A slight overlap is provided to remove the fin.

Zinc Slinger, "Ideal"

N. Ransohoff, Inc., Cincinnati, Ohio. [Vol.74,p.31.] 9.

Uniform galvanized coatings can be obtained on hardware and other parts by the use of the "Ideal" zinc slinger. The first section is a slanting hooded barrel heated by gas. The bar-



rel is of perforated metal, and its angle is adjustable. As the work moves through, excess zinc is shaken free and reclaimed. Parts travel in a larger drum revolving slowly in water, to set the zinc.

All threaded work from ¼ to 1 in. to 1x24 in. (up to 15 lb. per piece) can be run through the machine. After the zinc is set, the finished parts are discharged and dry of their own heat.

Hopper, High-Speed

Asa S. Cook Co., Hartford, Conn. [Vol.74,p.260.] 78.

For the rapid feeding of small parts, such as screws, bolts, nuts and washers, this device may be used in conjunction with a packaging or grossing machine or to feed the parts for another operation at rates up to 1,200 pieces per min.

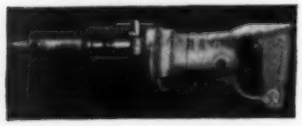
Parts move on an endless conveyor platform up an inclined trough, where a cut-out slides them down a parallel incline. Some parts fall into a slot, while the excess returns to the hopper. A revolving grooved disk positions them head up in the slot. The parts are then conveyed up a second incline and fed downward by gravity. A small gap is left between the end of this channel and the corresponding member of the receiving machine. If the blanks cannot be taken as fast as they are fed, they back up to this gap and the following ones fall back into the hopper.

Portable Tools

Drill and Hammer, Electric

Milwaukee Electric Tool Corporation, Milwaukee, Wis. [Vol. 74,p.302.] 99.

Holes up to $\frac{7}{8}$ in. in steel and up to 1 in. in concrete or brick can be drilled with this combination tool. The hammer attachment is constructed with



two moving parts, and is made to fit a full ball-bearing electric drill operating at high speed. This attachment is designed so that it can be easily attached to the drill without the use of tools. It delivers 3,600 blows per minute. Weight is 9½ lb.

Drill, Midget, Rotary, No. 11,

Chicago Pneumatic Tool Co., 6 East 44th St., New York, N. Y. [Vol.74,p.376.] 132.

Light weight is a feature of the ¼-in. production drill, known as the No. 11 "Midget" rotary. It is adapted for drilling "tell

tale" holes for use in airplane and light metal construction. The chuck furnished is a ¼-in. Jacobs; the light speed is 2,500 r.p.m.; the length over-all is 9¼ in.; the spindle offset is 1 in., and the weight is 3½ lb.

Drills, Electric, "Red Streak"

Wappat, Inc., Division of Simonds Saw & Steel Co., 7522-26 Meade St., Pittsburgh, Pa. [Vol.74,p.486.] 201.

The Type 145 slow-speed drill is adapted for using hole saws up to 3 in. and for drilling chrome-nickel steels. It can be

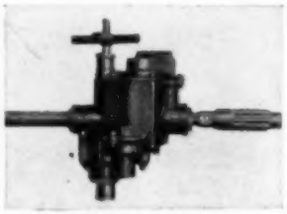
used for ½-in. drilling intermittently. The drill runs at 200 r.p.m., and cannot be stalled by hand drilling. Weight, 10 lb.

The Type 121 ½-in., standard-duty drill is for general maintenance drilling and has a full-load speed of 248 r.p.m. It also employs helical gears and is balanced.

Drill, Rotary, No. 99-C

Chicago Pneumatic Tool Co., 6 East 44th St., New York, N. Y. [Vol.74,p.775.] 289.

The No. 99-C pneumatic rotary drill is adapted to general-purpose drilling and reaming in close quarters. Ball or roller bearings are used throughout.



Adjustable grease fittings are placed on the gear and governor cases. Through-bolt construction is employed.

Capacity for drilling 1½-in. holes and reaming 1¼-in. holes is embodied. The no-load speed is 300 r.p.m.; length over-all, 14¾ in., and net weight, 35 lb.

Drill and Reamer, Heavy-Duty, No. 287, "Hercules"

Buckeye Portable Tool Co., Dayton, Ohio. [Vol.74,p.923.]

The Hercules No. 287 heavy-duty drill and reamer is also suitable for nut setting. The weight of this tool is 40 lb. The No. 287-3 drill and the No.

288-3 nut setter have a speed of 120 r.p.m. The No. 287-5 drill and No. 288-5 nut setter have a speed of 68 r.p.m. The drill is equipped with a No. 5 Morse taper socket, and the nut setter with a ¾-in. square spindle.

Saw Attachment for Drills, "Wyco"

Wyzenbeek & Staff, Inc., 566 Washington Blvd., Chicago, Ill. [Vol.74,p.962.] 403.

This sawing and filing attachment for use with a portable electric drill may also be applied

to a flexible-shaft unit. Saws are provided for cutting both wood and metal, or the unit can be used with ¾-in. square or round files. A standard ¼-in. electric drill provides ample power for the saw. Rotary motion of the drill shank is converted into reciprocating motion of the saw blade through a cylindrical, grooved cam and a hardened steel roller follower.

Grinder and Buffer, Portable

Standard Electrical Tool Co., 1938-46 West Eighth St., Cincinnati, Ohio. [Vol.74,p.483.]

A ½-hp., 220-volt, 60-cycle, 3-phase motor is employed in this portable electric grinder and buffer. Speed of the grind-

ing spindle is 5,400 r.p.m. Where high-speed Bakelite wheels are employed, wheel size is 6x1 in. x ⅝-in. bore. Length of the tool over-all is 26 in., and the diameter, 4½ in. Weight is 20½ lb. SKF ball bearings are mounted in dust-proof chambers.

Grinder, Pneumatic

Cleveland Pneumatic Tool Co., 3734 East 78th St., Cleveland, Ohio. [Vol.74,p.852.] 349.

This "Cleco" grinder is made in several sizes and styles for general grinding. Two styles of handles are available, and

give a choice of outside and inside throttle lever control. The rotor accommodates four separate blades, which are forced outward to the wall of a stationary cylinder that is set eccentric to the axis of the rotor.

Cleaning Tool, "Berg"

Concrete Surfacing Machinery Co., Berg Cleaning Tool Division, 4667-69 Spring Grove Ave., Cincinnati, Ohio. [Vol. 74,p.775.] 313.

For the removal of paint, rust and scale from steel surfaces, the "Berg" cleaning tool is light

and easily operated. Two cutter bundles—24 hardened steel, 14-pointed cutters in each bundle—are mounted one on each side of a gear housing. These cutter bundles revolve at 2,000 r.p.m.

Filer, Pneumatic, Hand, Kipp

Madison-Kipp Corporation, Madison, Wis. [Vol.74,p.71.]

The Kipp air filer operates at speeds from 500 to 5,000 strokes per min. Many different shaped files are available. Operation

of the tool is similar to the air chipper described on p. 912, Vol. 73.

The tool gives strokes of approximately ¼ in., and thus it is also suitable for honing and other operations. Air at pressures from 30 to 100 lb. per sq.in. can be used. Weight is 1½ lb., and length 7 in.

Flexible-Shaft Machine, Four-Speed

United States Electrical Tool Co., Dept. 44, 2390 W. Sixth St., Cincinnati, Ohio. [Vol.74,p. 886.] 320.

This belt-driven, flexible-shaft machine provides four different speeds—950, 1,250, 2,400 and 3,600 r.p.m. It is available in all common horsepower sizes

and in all styles of mountings—overhead or vertical, trolley, floor or stand, bench or horizontal. A complete line of tools and attachments is included.

Flexible-Shaft Kit, "Wyco"

Wyzenbeck and Staff, Inc., 566 Washington Blvd., Chicago, Ill. [Vol.74,p.922.] 391.

The outfit includes: a ¼-hp., 60-cycle, a.c. motor with built-in switch; "Wyco" flexible shaft, 4 ft. long; a 6-in. flexible sanding disk; 4- and 5-in. buffing wheels; 4-in. scratch brush;

4-in. emery wheel; ¼-in. drill chuck, wheel arbor, hardened wrench, and 10 ft. of electric cord. As ordinarily mounted, it has a swivel tripod-base, with a 12-in. tool tray.

Mica Undercutter, "Kellerflex"

Keller Mechanical Engineering Corporation, 70 Washington St., Brooklyn, N. Y. [Vol. 74,p.665.] 230.

For undercutting mica on the commutators of industrial motors, this flexible-shaft undercutter can be furnished in a suspended type, on a 6-in. bench stand, or on a low roller floor stand. The ball-bearing motor

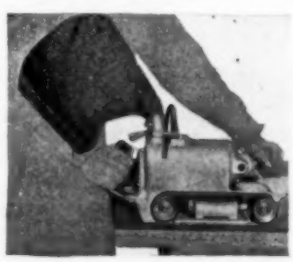
is mounted in a universal swivel yoke. A ¼-in. collet is furnished. The ball-bearing handpiece carries 1- or 1½ in. V- or U-type cutters.

An adjustable depth gage and two guide rollers with angular adjustments are provided. These rollers may be adjusted for work on commutators varying from 4 to 24 in.

Sander, Dustless, "Take-About"

Porter-Cable-Hutchinson Corporation, Syracuse, N. Y. [Vol. 74,p.920.] 352.

To eliminate dust hazards, the "Take-About" sander is now available with a vacuum type, dust-removal system. The dust

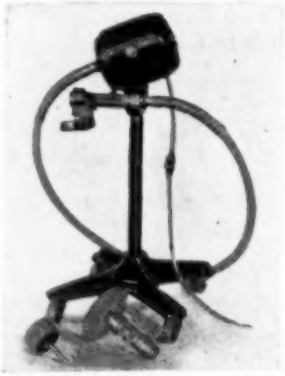


is removed easily from the bag through the zipper opening. Belts can be changed quickly and can be supplied in any grit. Belt size is 3x27 in., and the speed, using a No. 2 abrasive belt, is 1,030 ft. per min. Other belts can be supplied.

Shear, Flexible-Shaft, Portable

Biax Flexible Shaft Co., Inc., 22-14 Fortieth Ave., Long Island City, N. Y. [Vol.74,p. 228.] 34.

This shear is capable of cutting 16-gage Allegheny and Monel metal, 14-gage sheet iron, and 12-gage brass and aluminum. The shear hand-



piece is known as the Type S, and is ball-bearing equipped throughout. Cutting jaws are of special steel, and are interchangeable. This handpiece may be used on the Supra Biax units.

This portable shear can be furnished in a portable floor-stand type, a roller floor type, an overhead suspension type, and a combined shear and bench grinder.

Spraying Device, Metal

Taywal Corporation Sales Agency, Hamilton National Bank Bldg., Chattanooga, Tenn. [Vol.74,p.885.] 334.

This device weighs 2¼ lb., and operates from 110-volt a.c. or d.c. power line. It requires compressed air at 75 and 125 lb. per sq.in. It can be used to spray lead-tin alloys or any metal with

a low melting point. The material sprayed is so finely vaporized that the heat is dissipated, and therefore sprayed metal panels will not warp.

Balancer for Portable Tools, "Thor"

Independent Pnuematic Tool Co., 600 West Jackson Blvd., Chicago, Ill. [Vol.74,p.888] 372.

For suspending portable electric and pneumatic tools from the ceiling to a point above the work, the "Thor" balancer has

a cable drum of tapered design. The main spring maintains an equal holding effect regardless of the position of the load within the travel range of the balancer. In case the main spring should break, the load will not drop. Capacities are 30, 60, and 80 lb.

Small Tools

Boring, Facing, and Threading Tools, Internal, "Fanger"

Bochum Tool Co., P. O. Box 32, Northwestern Stat., Detroit, Mich. [Vol.74,p.963.] 379.

On the "Fanger" internal boring, facing, and threading tools the special circular form enables them to be reground

quickly or to be touched up while there is any form left on the circumference. All tools of 0.472 in. in diameter and upwards are bored and threaded to screw on the bar. Below 0.472 in. in diameter, the tools are made in solid, and split-spring clamping blocks are supplied to fit these when required. A special 22-per cent tungsten alloy steel is used for the tools.

Dolly for Sheet Metal

Whitney Metal Tool, Rockford, Ill. [Vol.74,p.298.] 102.

Hand "dollies" for use in sheet-metal work have been placed on the market in two sizes. The small type can be used in seven different positions and is so designed that it will not roll when laid lengthwise on the bench. It weighs 3 lb.

The large one is intended for the shop and weighs 7½ lb. All machined surfaces are hardened.

Drills, Web-Ground

Hi-Duty Drill Works, Fleetwood, Pa. [Vol.74,p.377.] 119.

This drill is ground in the web to insure it being dead in the center, so that the lips do not cut large after they have been ground down to 1½ in. from the end. Some drills may be from 0.005 to 0.008 in. out of line after hardening, and in larger sizes cannot be straightened readily. Grinding the web corrects this condition.

End Mills and Saws, Stagger-Tooth

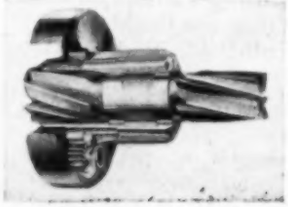
Union Twist Drill Co., Athol, Mass. [Vol.74,p.373.] 120.

A two-lipped end mill, a coarse-tooth end mill, and a metal slitting saw are offered. The two-lipped end mill is threaded for a draw-in bolt, and the coarse-tooth end mill is likewise equipped. The metal slitting saw is provided with staggered side teeth and is recommended for deep slotting. The end mills are made up to 1½ in., and the slitting saw up to 10 in. in diameter and not thinner than $\frac{3}{16}$.

Double End Mills, Chucks ad Collets

Thurston Manufacturing Co., Providence, R. I. [Vol.74,p. 926.] 378.

Double service is the feature of these double end mills. If one end requires regrinding or is broken, the tool is quickly reversed and the operator proceeds with his work. A special chuck holds the mill positively



and eliminates slipping under the heaviest feeds and speeds. Chuck is standardized for the use of various collets, and all mills are interchangeable. The chuck can be mounted directly on the nose of the spindle in the milling machine, and held by four studs, which are driven by two large keyways.

Grinding Fixture, Thread-Tool

John Jorgensen, 465 Maplewood Ave., Bridgeport, Conn. [Vol.74,p.809.] 284.

These fixtures are made for both 29- and 60-deg. thread angles and will take tool bits up to ⅜ in. square. The "Standard" 60-deg. fixture is adapted for use with all V or U.S.S. fine

threads where the helix angles are not over 5 deg., as this fixture grinds only the V and the flat of U.S.S. fine threads. The "Precision" 60-deg. fixture will grind tools from 0 deg. to very high helix angles. The "Precision" 29-deg. fixture is for grinding on the top or cutting edg of the tool at the same setting of the pointer as for the graduation corresponding to the helix angle to be cut.

Hacksaw Frame, Shallow, No. 150

L. S. Starrett Co., Athol, Mass. [Vol.74,p.960.] 308.

The No. 150 Hacksaw frame has a throat just deep enough to accommodate the blade. Cuts

can be made easily and quickly in spaces offering hardly more than 1 in. clearance. The No. 150 is fitted with the usual four-way blade adjustment.

Milling Cutters, Tungsten-Carbide, Full-Back-Blade

Kearney & Trecker Corporation, Milwaukee, Wis. [Vol.74, p.262.] 67.

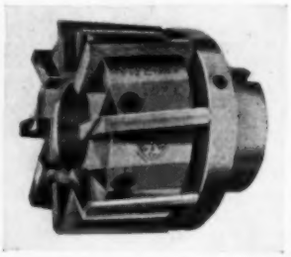
The cutter is known as the full-back-blade type because each blade is provided with a

solid, positive contact along its entire back face, a feature that is essential for the correct application of tungsten carbide. Blades are set practically flush with the face, whereas chip clearance is attained by cutting suitable slots in the body. Sizes range from 5 to 14 in., either left or right hand, with blades that are applicable for medium and semi-roughing, or finishing cuts. Their design is suited to milling cast-iron, semi-steel, malleable iron, bronze, copper, and aluminum.

Reamers, Expansion, Serrated-Blade

Goddard & Goddard Co., Inc., Detroit, Mich. [Vol.74,p. 484.] 189.

The serrated-blade reamers provide quicker adjustment, positive cushioning, and long life of the blades. The reamer consists of four components—alloy, heat-treated steel body, high-speed (or other cutting metal)

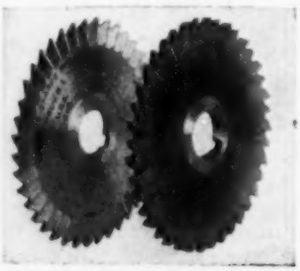


blades, adjusting nut, and cam lock. Standard styles available are shell, taper and straight shank. Eight blades only are required for the entire standard finishing reamer range of 1 to 6 in.

Saws, Metal-Slitting, with Side Chip Clearance

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.74,p.994.] 423.

These saws of high-speed steel permit the chips to be carried out of a deep slot without



jamming. In addition, to the pockets at the sides of the teeth, the sides of the saws are recessed. A concavity of the lateral cutting edges is also provided.

The teeth for saws up to and including $\frac{1}{32}$ in. in thickness are made in the straight-tooth type, and above $\frac{1}{16}$ in. in the staggered-tooth type. Saws from 3 to 8 in. are available.

Screw Extractor, "Little Giant"

Greenfield Tap & Die Corporation, Greenfield, Mass. [Vol.74,p.488.] 194.

For removing broken screws, studs and pipe fittings, the "Little Giant" screw extractor feeds into a hole drilled in the broken

screw of stud, instead of having to be hammered in. It takes a positive grip which will start the screw and turn it out on its own threads. The tool is made in diameters for the small end of $\frac{1}{16}$ to $1\frac{31}{32}$ in.

Snips, "Nu-Grip"

J. Wiss & Sons Co., 33 Littleton Ave., Newark, N. J. [Vol. 74,p.964.] 310.

These "Nu-Grip" snips are made in Types U-7 and U-8½ regular pattern for straight work and the Type UC-8 combination pattern for curved, irregular and straight work. The regular pattern snips are 7 and 8½ in. long, respectively, and the combination pattern snips, 8 in. All types are made of crucible tool steel, hardened and tempered, and fitted with a hardened bolt and nut.

Soldering Iron, Gas-Heated, "Torchiron"

Reliance Specialties Manufacturing Co., 122 East 42nd St., New York, N. Y. [Vol.74,p. 414.] 163.

Low gas consumption is the feature of the "Torchiron" soldering iron. For example, gas

consumed with a 3-lb. tip is between 6 and 7 cu. ft. per hr., and with a 5-lb. tip between 8 and 9 cu. ft. Low-pressure air and either natural or artificial gas are used, being sensitively controlled by the mixing needle valve. By indirect heating of the copper tip, filing, cleaning and retinning of the copper tip are minimized. The tool is being made in sizes to take from ½- to 5-lb. coppers.

Soldering Iron, Cordless, "Esico"

Electric Soldering Iron Co., Inc., 135-139 West 17th St., New York, N. Y. [Vol.74,p. 260.] 90.

On continuous work, two bases and two irons may be used, so that one iron is always heating. Projecting from the

handle is a ring terminal which is inserted in the socket base, which is made at an angle. The iron is especially suitable for work on switchboards.

Tantalum Carbide, "Ramet"

Fansteel Products Co., Inc., North Chicago, Ill. [Vol.74,p. 371.] 138.

"Ramet" cutting metal consists of tantalum carbide held in nickel. The alloy is brazed upon a steel shank in the form of a tip.

Ramet is not easily "wet" by other metals; thus, the chip does not tend to erode the cutting alloy by combining with it chemically. Because of the low thermal conductivity of Ramet, the heat developed by the cutting action remains in the chip. It is feasible to design the tools with relatively small rake and clearance. Hardness ranges from 88.5 to 90.5 on the Rockwell no-load C scale. The ultimate strength of the average specimen ranges between 250,000 and 300,000 lb. per sq.in. In using the material, the most satisfactory arrangement seems to be to maintain the feed and increase the speed of operation.

Taps, "Tru-Lede"

Greenfield Tap & Die Corporation, Greenfield, Mass. [Vol.74,p.810.] 340.

These high-speed steel taps have a permitted lead tolerance of 0.0005 in. in 1 in. as compared with 0.003 in. on cut-thread taps. They have the same pitch and major-diameter tolerances as cut-thread taps for producing Class 2 fits. Shanks are ground concentric with the threads. The taps are offered in hand, machine screw and gun styles in all standard sizes.

Gaging and Testing Equipment

Toolbits, Semi-Finished

Noyes Tool Sales Co., Bridgeport, Conn. [Vol.74,p. 336.] 79.

Semi-finished toolbits in three shapes are being carried in stock. These shapes are standard toolbits, shaper corner tools, and round nose, thread or side tools. They are carried in stock in standard brands of high-speed steel.

V-Blocks and Clamps

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.74,p.998.] 424.

The No. 750 B V-blocks and clamps have stepped clamping lugs and are suitable for inspectors' use. The blocks can be used on their sides as the clamps do not project. Work up to 2 in. in diameter is taken.

The V-block No. 750C leaves the entire top side of the work

accessible. The clamps are designed to hold stock of square or rectangular cross-section as well as round stock. A hole through the center of the block allows drills and drifts to project through the work. A tongue in the bottom is a convenience when the block is used on a machine table. It has capacity for round stock up to 1½ in.

Vise, Step-Jaw

Bay State Tool & Machine Co., 412 Albany St., off St. James Ave., Springfield, Mass. [Vol.74,p.191.] 37.

A vise with step jaws to hold work without using parallels has been designed. This vise weighs 14 lb., but has a 6-in.

jaw opening. The width of the jaw is 5½ in. Telescopic screws are used for setting the jaws. A V-section is provided for holding small punches.

A smaller vise, weighing 7 lb. has a 4½-in. jaw with a 4-in. opening.

Vise, Treadle-Operated

Simplex Tool Co., Woonsocket, R. I. [Vol.74,p.888.] 373.

The vise jaws are opened for insertion of the work by pressing down on the treadle and are brought together by slipping the

foot from the treadle and thus releasing a spring exerting a force of 300 lb. The vise jaws are set for different diameters of work by a knurles screw.

Wrench, Pipe, All-Steel, Stillson

Threadwell Tool Co., Mechanics Tool & Wrench Co., Lessee, Greenfield, Mass. [Vol.74, p.337.] 61.

Heavy-gage steel is employed for the frame, which is braced against spreading from side strain by two oversize steel

rivets. A special double-action spring is employed, which can be removed easily and replaced without the use of tools. The pipe wrench is made in 6 to 24-in. sizes.

Wrenches, "Crestoloy"

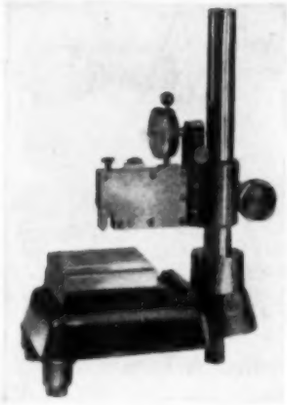
Crescent Tool Co., Jamestown, N. Y. [Vol.74,p.960.]

These drop-forged wrenches of "Crestoloy" steel will stand a strain of over twice that required to break a regular Crescent wrench, but they are one-third thinner and are consequently lighter and easier to handle. The wrenches are offered in 6-, 8-, and 10-in. sizes, having capacities for ¾-, ⅞, and 1⅛-in. nuts.

Comparator, Amplifying

Precision Gage & Tool Co., 320 East Third St., Dayton, Ohio. [Vol.74,p.417.] 167.

Capacity to measure to 14 in. above the surface plate of 8½ in. above the platen is embodied in this amplifying comparator. The platen is quickly adjustable to any desired position. A close-coupled, two-piece movement or action is employed. It is mounted on hardened knife



edges and inclosed in a dust-proof case. The amplification ratio is 10 to 1 as standard. Amplified movement is read by means of a dial indicator graduated to half ten-thousandths and having a range of 0.013 in.

Comparators, External and Internal

Standard Gage Co., Poughkeepsie, N. Y. [Vol.74,p.925.]

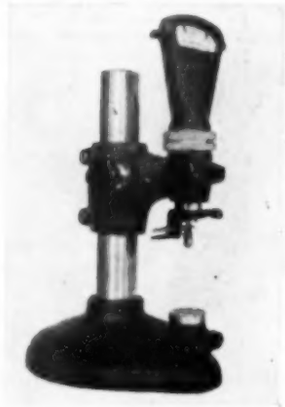
The external gage is available with a dial indicator or a fan-shaped scale. The dial scale is graduated to 0.0001 in. in widely spaced divisions, whereas the fan-shaped scale is graduated to 0.00005 in., and may be fitted with tolerance markers. Optically flat 4-in tables with serrated surfaces are furnished with the external gages. Pieces up to 6 in. in height can be accommodated under the direct-acting dial plunger.

The internal gage is for exploring holes for bell mouth, taper, and out-of-roundness. Ball races and bushings can be quickly checked for the above conditions. The dial is graduated to 0.0001 in. The work is slipped over two arms projecting from the body. Comparators for bores from ½ to 3 in. and up to 3 in. in length are available.

Indicator Stand, Model U-3, Société Genevoise

R. Y. Ferner Co., Investment Bldg., Washington, D. C. [Vol. 74,p.843.] 336.

This stand is designed for use with the fan-shaped micro-indicator. It has an oval-shaped base 10 in. long x 7½ in. wide and rests on three rubber feet. A socket is bored to provide for the interchangeable mount-



ing of different types of lower anvils or tables.

The table is hardened and lapped optically flat. It is 1⅜ in. in diameter. Arm movement is 6 in. The micro-indicator unit itself is mounted in the arm through an adjustment ring on the upper part of the supporting arm. The stand is 13¾ in. high and weighs 32 lb.

Gage, Electric

Sheffield Machine & Tool Co. Dayton, Ohio. [Vol.74,p.223.]

Readings to 0.0001 in. can be made with this electric gage, which has no wearing parts, except the anvils. The green light indicates undersize, the amber light correct size, and the red light oversize.

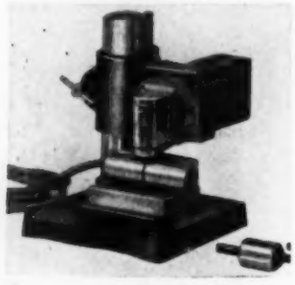
The indicator lever travels between two contact points, which are adjustable from 0.00002 in. to 0.002 in. tolerance. Movement of the indicating lever is transmitted by parallel spring-steel reeds attached to two blocks. The mov-

able block is held down against the plunger of the upper anvil by a fine coil-spring and when it moves upward distorts the reeds that actuate the indicating lever.

Gage, Magnifying, Electric

General Electric Co., Schenectady, N. Y. [Vol.74,p.340.] 76.

An electric gage that measures one one-hundredth thousandth of an inch, and then magnifies that dimension 10,000 times, has been developed. This type of gage is suitable for almost any type of measurement

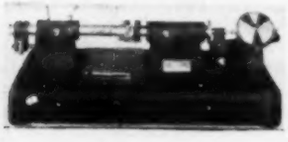


with certain changes in set-up. The gage consists essentially of a contact point supported to move through a limited distance in the direction of measurement, say 0.0005 in. This movement causes a pointer to travel 5 in. over the scale of an indicating instrument. The diamond contact point is fitted in the gage spindle, which is made to suit the work.

Gage, Screw-Thread

Federal Products Corporation, Providence, R. I. [Vol. 74,p.697.] 256.

The unit is designed for checking taps, screws, thread gages and miscellaneous products. The dial indicator, graduated in 0.0001, is calibrated 0-5-0, and is equipped with a tolerance shutter. The gage uses the 3-wire method of measuring,



the individual wire being floating and the remaining two semi-floating. It can be changed instantly to allow for other sizes. Over-all length, 24 in.; weight 200 lb.

Gage, Cylinder, Model 165

Federal Products Corporation, Providence, R. I. [Vol. 74,p.414.] 156.

Quick and accurate measuring of small holes can be done with the Model 165 cylinder test gage. For bench work, the tool can be permanently mounted with an attachment. It is

suitable for measuring inside diameters from ¼ to 1½ in., the dial indicator being graduated to 0.0001 in. Gaging plugs can be changed in less than 30 sec., the range of each plug being plus and minus 0.010 in.

Indicator Finger

Barber-Colman Co., Rockford, Ill. [Vol.74,p.446.] 176.

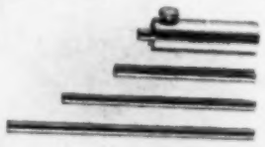
For getting into places that cannot be reached by a regular indicator, this indicator finger can be clamped to a dial indicator. It is fastened to the case

barrel surrounding the indicator plunger so that the curved end of the bell crank rests against the end of the plunger. Thus, movement of the ball end of the bell crank is transferred to the indicator.

Gage, Depth, No. 599

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.74,p.376.] 127.

The No. 599 depth gage can be used against or between very small shoulders or in shallow recesses. Depths from 0 to 2

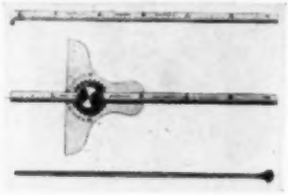


in. by thousandths are obtained by measuring the over-all length of the body and rod with a micrometer. From this measurement is subtracted the length of the body, which is exactly 1 in. The body has a V-groove, which facilitates measuring against a curved surface. The tool can be used to measure distances from 1 to 3 in. between shoulders.

Depth Gage, Adjustable-Angle, No. 331

Union Tool Co., Orange, Mass. [Vol.74,p.997.] 427.

The head of this tool is marked on both sides of the adjusting stud as follows: 15, 30,

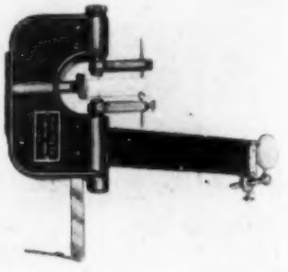


45, 60, 75 and 90 deg. For measuring holes too small for the rule, a rod 6 in. long and ⅜ in. in diameter is furnished. The No. 431 hook rule can be used with this gage, making it a caliper rule.

Gage, Inspection

Wells Manufacturing Co., P. O. Box 613, Greenfield, Mass. [Vol.74,p.1000.] 409.

A reading magnified 300 times is the feature of this rapid inspection gate. For measuring screws or taps, either

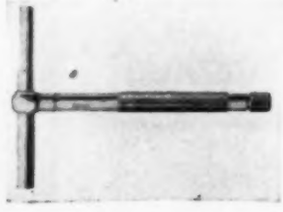


anvils or the three-wire system may be employed. The anvils are opened by the pedal and closed by a spring. A small electric light with a hood can be furnished to make for easier reading of the gage.

Gage, Telescoping

Lufkin Rule Co., Saginaw, Mich. [Vol.74,p.191.] 35.

Both plungers of this gage telescope. Better balance is obtained and more accurate meas-

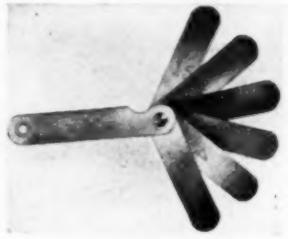


urements result. The plungers can be locked by a slight turn of the knurled screw. The five sizes enter holes from ½ to 6 in. and are offered separately or in sets.

Gage, Thickness, No. 78

L. S. Starrett Co., Athol, Mass. [Vol.74,p.488.] 197.

Six leaves are furnished in the No. 78 thickness gage—0.0015, 0.002, 0.003, 0.004, 0.006

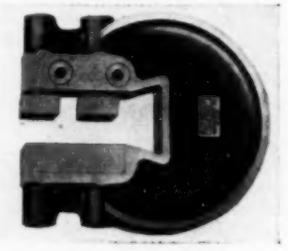


and 0.015-in., giving a range by thousandths from 0.0015 to 0.0315 in. Leaves are protected by a steel case.

Gages, Flat-Plug and Shoulder-Snap

Taft-Peirce Manufacturing Co., Woonsocket, R. I. [Vol. 74,p.225.] 49.

The adjustable flat plug gage is for measuring large internal diameters. The gage consists of a balanced body shaped to fit the hand. By an eccentric adjustment, the gaging members



are expanded and locked for regrinding. Expansion of ⅛ in. is provided to allow a number of regrindings.

The adjustable snap gage is designed for checking flat or cylindrical work of plain sections or shoulder work up to a sharp corner. The adjustable member has two square anvils that can be set to the required limits.

Gages, Stub

Pratt & Whitney Co., Hartford, Conn. [Vol.74,p.297.] 101.

These stub gages can be used in precision boring operations where the clearance between the tool and the hole is small. Each is made with the usual cylindrical gaging surface, but a short knurled fingergrip is substituted for the handle. The tool is made of alloy tool steel, heat-treated, and the gaging surface

is lapped to size. Seventeen sizes are manufactured—$\frac{1}{8}$ to 2 in.

Gage, Plug, Utility

Van Keuren Co., 12 Copeland St., Watertown, Mass. [Vol. 74,p.736] 267.

A combination straight and taper plug gage for measuring holes during lapping, grinding or boring has been developed. A taper of 0.010 in. in a $\frac{1}{4}$-in. length is ground on the entering end of the plug, the remain-

ing portion being precision lapped to the desired size. The distance that the plug enters indicates how much stock remains in the hole. A short-knurled grip is provided so that the plug may be used while the work is in the machine. The gage is available in standard fractional sizes up to 1 in.

Gage, Snap, "Mikrotast," Krupp

Coats Machine Tool Co., Inc., 110 West 40th St., New York, N. Y. [Vol.74,p.668.] 257.

This snap gage can be applied to rotating work. All contact points are faced with "Widia" tungsten-carbide. It is adjustable in range, since the lower anvil can be let out

toward the snap gage center and locked in any position. The backstop is likewise adjustable.

Mikrotast snap gages are made in the following capacities: 0.787 in. to 1.378 in.; 1.378 in. to 1.968 in.; 1.968 in. to 2.756 in.; 2.756 in. to 3.543 in.; 3.543 in. to 4.724 in. Any standard Mikrotast indicator will fit.

Gages, Snap, Adjustable-Limit, Types A, B and C

Pratt & Whitney Co., Hartford, Conn. [Vol.74,p.739.] 275.

The frame is made in the form of a truss, with the outer and inner ribs flanged. The web between the flanges is comparatively thin. The Model C gage is made with one solid anvil, two adjustable anvils and a Bakelite grip. The solid anvil is held by two screws. It pro-

jects beyond the adjustable anvils to permit self-location on the work. The adjustable anvils are adjusted by push and pull screws engaged in threaded holes in both the anvil and the frame. Eight sizes range from 0 to 5 in. The Model B gage employs four, square, adjustable anvils, so placed in the frame that the gap between them is too small to allow the work to drop between. Eight sizes range from $\frac{1}{8}$ to 5 in.

The Model A gage has four round anvils with much smaller contact surfaces. It is made in fifteen sizes, from 0 to 12 in. the Model B gage in eight sizes from $\frac{1}{8}$ to 5 in.

Plugs, Setting, for Snap Gages

Pratt & Whitney Co., Hartford, Conn. [Vol.74,p.883.] 276.

Setting plugs, combining "Go" and "Not Go" dimensions in one piece, and intended for the purpose of setting snap gages

quickly and duplicating the setting as needed, have been placed on the market. They are ground and machine-lapped to size. Plugs 1 in. in diameter and larger are made from "Trilock" blanks. Plugs smaller than 1 in. are made solid. All setting plugs have an insulator on each end.

Rule, Tape, Steel, "Crescent"

Lufkin Rule Co., Saginaw, Mich. [Vol.74,p.997.] 404.

This 6-ft. tape-rule has an accurate steel tape that automatically winds into a study case 2 in. in diameter, and yet when completely withdrawn is

rigid because it is of tempered steel, stiffened by special forming. The rule is nickel-plated and has prominent dark markings in inches to 16ths for the No. 696, and in 10ths and 100ths of a foot (engineers' measure) for the No. 696D. The rule blade is returned automatically by pressing the center button.

Trammel, No. 251

L. S. Starrett Co., Athol, Mass. [Vol.74,p.304.] 87.

The No. 251 trammel employs a beam made of steel rod to prevent inaccuracies. The beam is flattened on top so that the trams, once clamped in position, have no tendency to turn. One tram has an adjusting screw that permits fine adjust-

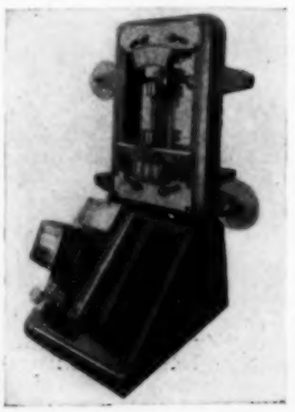
ments. Trammel points are adjustable in the spring chucks and can be replaced by pencils, caliper legs or ball points. The trammel is available with steel beams to scribe circles of 18, 26 and 36 in.

Bending Machine, Static and Dynamic

Southwark Foundry & Machine Co., Testing Equipment Division, Philadelphia, Pa. [Vol.74,p.558.] 27.

The "Foeppl-Heydekampf" machine is especially suitable for short-time determinations of the fatigue limit of materials. The features are as follows: simplicity of construction; no moving parts to wear out; easy operation; simple shape of specimen; versatility of measurements; the results may be checked; clamping effect is eliminated, and quiet operation.

A switch panel contains all necessary operating and controlling instruments. Connec-

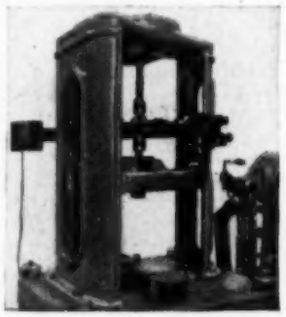


tion of the set to a 110- or 220-volt d.c. source makes it ready for operation. Cycles per minute are counted by an electric counter.

Extensometer, Mirror, Riehlé-Sayre

Riehlé Bros. Testing Machine Co., 1424 North Ninth St., Philadelphia, Pa. [Vol.74,p. 33.] 25.

The "Riehlé-Sayre" mirror extensometer permits a semi-production basis of the reading of high-precision extensometer measurements. By the use of a system of four prisms two

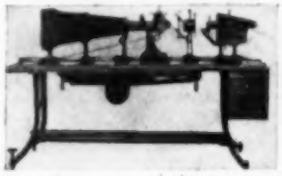


ends are gained: First, elongations on both sides of the specimen are averaged automatically; and, second, any movement or vibration of the specimen is compensated for. Readings may be taken directly to 1 part in 100,000 on a 2-in. gage length.

Micro-Metallograph, Improved

E. Leitz, Inc., 60 East 10th St., New York, N. Y. [Vol. 74,p.33.] 24.

Heavier design is now employed in this micro-metallograph. The object stage is of increased dimensions and affords correct mechanical motion to the specimen. The fine ad-

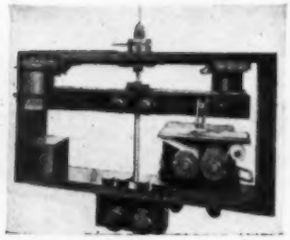


justment is encased in a separate housing, protecting the micrometer screw from thermal effects. By employment of periplan eyepieces, increased flatness of the micro-image is obtained.

Testing Machine, Damping, "Foeppl-Pertz"

Southwark Foundry & Machine Co., Testing Equipment Division, Philadelphia, Pa. [Vol.74,p.263.] 15.

The "Foeppl-Pertz" damping tester is for the determination of internal frictional losses of



materials. It is mounted on a frame hung from the ceiling on a wire. The test rod carries on its top an oscillating mass which makes a reciprocating rotary movement about the axis of the specimen, twisting the same back and forth. Stresses in the specimen are purely torsional.

Testing Machine, Hardness, "Firth Hardometer"

Tinius Olsen Testing Machine Co., 500 North 12th St., Philadelphia, Pa. [Vol.74,p.996.] 420.

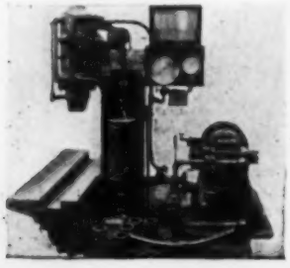
The Firth Hardometer hardness testing machine, manufactured by Thomas Firth & John Brown, Ltd., Sheffield, England, operates on the stand-

ard Brinell principle, but uses lighter loads and either a small steel ball or a diamond pyramid as an indenter. The diameter or diagonal of the impression is measured instead of the depth. With the micro-projection head the size of the indentation is shown on a ground glass directly before the operator.

Testing Machine, Railroad Spring

Joseph T. Ryerson & Sons, Inc., Chicago, Ill. [Vol.74,p. 996.] 269.

This machine is furnished with a self-contained, motor-driven Oilgear unit. A pressure

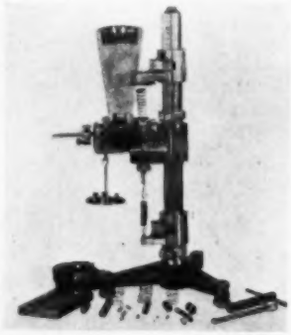


of 50 tons is developed at 1,500 lb. per sq.in. for the system. The machine is arranged for testing full-elliptic springs for passenger cars as well as semi-elliptic locomotive and coil springs. The frame has an 11-in. throat and a worktable 25 in. wide. A scale indicates the spring deflection.

Testing Machine, Spring, Type RS2, "Elasticometer"

Coats Machine Tool Co., Inc., 110-112 West 40th St., New York, N. Y. [Vol.74,p.919.]

For very accurate compression and extension tests of light springs, the "Elasticometer" RS2 works on knife edges in



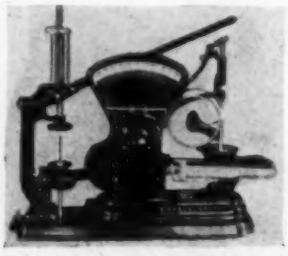
the same manner as the larger machines of the line. It has a maximum load capacity of 5 lb., and the scale has a 1:1 ratio. Tension and compression tests are made by means of slides. Adjustable stops limit the motion of these slides for quantity inspection.

The maximum open length of compression springs is 6¼ in., and the maximum extended length of extension springs is 8¾ in. The maximum spring diameter taken is 1¾ in.

Testing Machine, Piston Ring and Valve Spring,

Toledo Precision Devices, Inc., subsidiary of the Toledo Scale Co., Toledo, Ohio. [Vol. 74,p.852.] 316.

This combination piston-ring and valve-spring "Autugage" compares the strength of piston

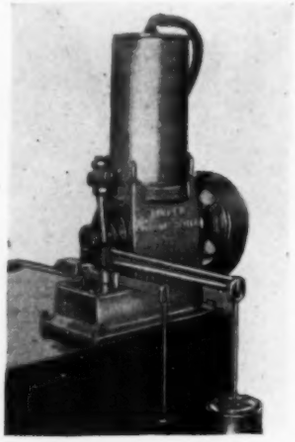


rings and gages the compression strength of valve springs of an engine. Ring resistance is ready directly from the chart, using the bottom black figures. Compression strength of a spring is read from the chart.

Testing Machine, Lubricant

Timken Roller Bearing Co., Canton, Ohio [Vol.74,p.301.] 72.

Testing load-carrying capacity of lubricants is the function of this equipment. In addition, it can be used to obtain data on relative efficiency of



bearing metals under various conditions of load, speed, temperature, or lubricants.

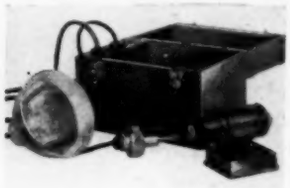
The equipment consists of a cast-iron base which supports the testing mandrel, two levers, and a lubricant container. An electric heater raises the oil temperature. The mandrel is tapered to receive the tapered cup of a Timken bearing, which forms one of the test pieces. The test block is about ½ in. in section by ¾ in. long, hardened to Rockwell C-60 and ground. The load on the blocks can be adjusted.

"Vibroscope," Model 3

Electrocon Corporation, 6 Varick St., New York, N. Y. [Vol.74,p.344.] 69.

Stroboscopic action is employed in the Model 3 "Vibroscope." This model has five times the illuminating power of the Model 1, which has been on the market for some years.

The Vibroscope is applicable to the study of rotary, recipro-



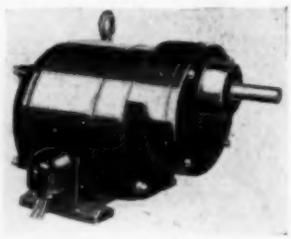
cating, or vibratory motions, and in fact, to any type of motion that occurs in repeating cycles, and provided that the hand lamp flashes in synchronism with the motion, or at a low multiple of it. Apparatus running at speeds from 40 to 12,000 r.p.m. can be observed. The higher speeds can be handled by using the motor unit.

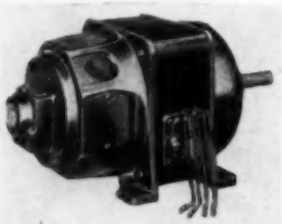
Electrical Equipment

Motors, Box-Frame

Robbins & Myers, Inc., Springfield, Ohio, and Brantford, Ontario. [Vol.74,p.303.] 89.

Box-frame motors in sizes from ½ to 3 hp. are now available. They are compact, powerful and have semi-inclosed end





heads. Mounting dimensions are the same as for repulsion-induction, single-phase, polyphase, and d.c. types having similar ratings and speeds. An improved wool-yarn bearing lubrication system is standard.

Motors, Geared-Head

Master Electric Co., Dayton, Ohio. [Vol.74,p.373.] 142.

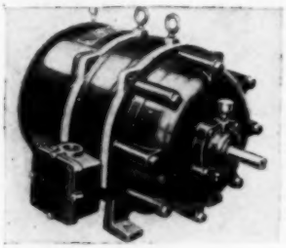
The parallel-shaft type is built in sizes from 1/30 to 5 hp., in single-phase and d.c. models, and from 1/30 to 20 hp. in polyphase models. The parallel shaft type is available in multiples of 0.25 for any ratio between a maximum reduction of 6 to 1 and a maximum acceleration of 2.5 to 1 of standard motor speed. It is equipped with anti-friction bearings throughout. Gears are of the continuous-tooth herringbone type. The gear housing can be arranged so that the shaft projects in any one of four different positions. An oil seal reduces lubrication to every 1,000 hours of service.

The right-angle shaft motor is built in sizes from 1/30 to 5 hp., single-phase and d.c.; and 1/30 to 10 hp. polyphase. Standard ratios range from 8 to 1 to 72 to 1 in nine steps. This type is also equipped with anti-friction bearings throughout, but employs a worm-gear reduction. The shaft can project in eight positions or twice those of the other model.

Motors, Types EKCL and EKBB

Howell Electric Motors Co., Howell, Mich. [Vol.74,p.417.]

For Class 1, Group D, service, both polyphase and single-phase motors with either totally inclosed frames or totally inclosed fan-cooled frames have

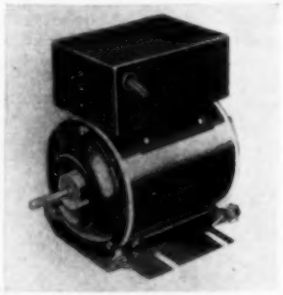


been developed. The polyphase motors are of squirrel-cage construction, with extra heavy castings. The single-phase motors are also of squirrel-cage construction, and are of the condenser-start type.

Motors, Fractional-Hp., Type CI

Howell Electric Motors Co., Howell, Mich. [Vol.74,p.559.]

A complete line of fractional horsepower motors from 1/10 to 1/3 hp. has been developed. This line consists of condenser start, split-phase, and polyphase

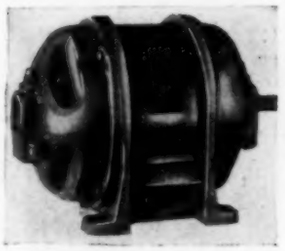


motors, all built to the same frame dimensions. The condenser motor has the condenser mounted in a compact box at the top with all connections made inside. It is of the high-starting torque, constant-speed type, having at full voltage a starting torque of from 300 to 400 per cent of full load torque, and a maximum running torque of at least 200 per cent.

Motor, Induction, Squirrel-Cage, W-Frame, Type CS

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. [Vol.74,p.737.] 247.

In the W-frame, Type CS, squirrel-cage, induction motor, the different parts of the motor are designed as entirely separate units. Thus, the company has only to keep a nominal inventory of standardized parts to

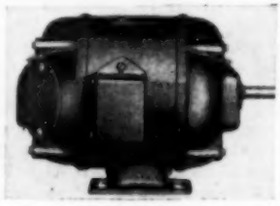


be able to build, on short notice, a motor for a specific application. The separate-frame construction makes it possible to supply any one of a number of different types of frames. Brackets are bolted to the frame with a ring-groove fit that automatically and permanents sets the air gap and aligns the bearings.

Motors, Fractional-Hp.

Century Electric Co., St. Louis, Mo. [Vol.74,p.738.] 262.

Interchangeable mounting dimensions are now featured in this line of fractional-horsepower motors, which includes



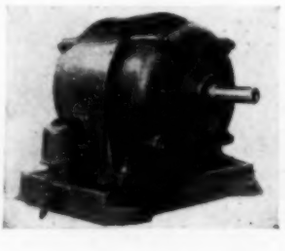
single-phase, repulsion-start, induction type; split-phase, single-phase type, and a d.c. type. The motors have rolled-steel frames and welded-steel feet.

The 60-cycle motors are built in $\frac{1}{8}$, $\frac{1}{6}$, and $\frac{1}{4}$-hp. sizes, in four frame styles; the 50-cycle motors in $\frac{1}{8}$- and $\frac{1}{4}$-hp. sizes, and the 2-cycle motors in $\frac{1}{8}$-hp. sizes.

Motor, Drip-Proof

Ideal Electric & Manufacturing Co., Mansfield, Ohio. [Vol. 74,p.736.] 265.

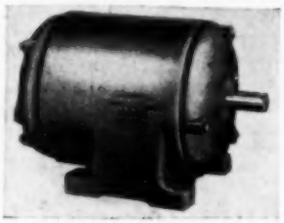
When water is thrown into this motor, it is discharged immediately through the vent at the bottom of the center inclosing jacket. Air circulation is from both ends toward the center and out through this vent. Large shrouded fans located just inside the end brackets produce the action which discharges the water. The insulation is such that an occasional wetting will not have any serious effect.



Motor, Ball-Bearing, "Rite-Lo-Speed"

J. D. Christian, Engineers, 512 Brannan St., San Francisco, Calif. [Vol.74,p.773.] 302.

The "Rite-Lo-Speed" motor embodies a standard footless stator and rotor, and heat-treated, alloy-steel helical gears, ball-bearing mounted. The gear, or speed reducer end, embodies



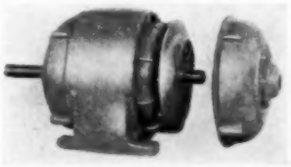
only two gears and two pinions. It is so arranged that a heavy overhung pull can be taken on the final shaft.

The motor-speed reducer is manufactured in four series, giving one power take-off, two identical speed take-offs, two different-speed take-offs, and a take-off and an extended motor shaft. Sizes from 1 to 30 hp., and a junior model from $\frac{1}{4}$ to 1 hp., are available.

Motor, "Klosd-Tite"

Sterling Electric Motors, Inc. Telegraph Road at Atlantic Blvd., Los Angeles, Calif. [Vol. 74,p.924.] 381.

This "Klosd-Tite" motor has two cast-iron inclosures, the fan drawing air in at the outer end bell and directing it over

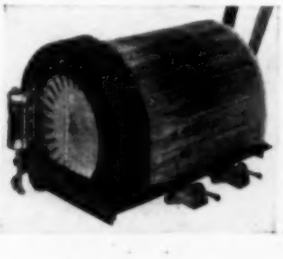


the inner casing. Lubrication is facilitated by means of oilers projecting through the outer casing into the inner bearing housing. Lubriseal ball bearings prevent entrance of dirt into the interior.

Motor Inclosure

Dunn-Walter Co., Milwaukee, Wis. [Vol.74,p.338.] 122.

For preventing the accumulation of dust and moisture on motors, this corrugated copper

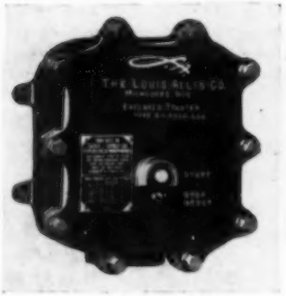


cover having steel end walls and a supporting baseplate has been developed. At one end of the inclosure is a cooling fan and an outside combination guard and air deflector. The inclosure is made for motors from 5 to 100 hp.

Starter, Air-Break, "Explosion-Proof"

Louis Allis Co., Milwaukee, Wis. [Vol.74,p.30.] 10.

The Type E, Form AAA starter is built to prevent the escape of flame from any explosion likely to occur inside the apparatus due to grounds and burn-outs. The starter proper

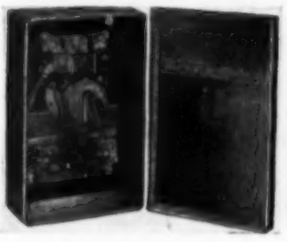


consists of the usual across-the-line, airbreak, magnetic contactor with overload and under-voltage protection. Strength to withstand explosions is provided by a very heavy cast-iron case.

Starter, A.C., Bulletin 609

Allen-Bradley Co., 1311 South First St., Milwaukee, Wis. [Vol.74,p.343.] 145.

For motors of 3 hp., 110 volts; 5 hp., 220 volts, and 7½ hp., 440-550 volts, this hand-operated Bulletin 609 starter with

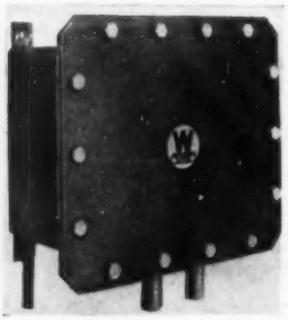


overload breakers is offered. It is reset with a lever without opening the switch cover. The switch can be padlocked in open position.

Linestarter, D.C., Explosion-Tested, Type C

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. [Vol.74,p.888.] 350.

This magnetic starter is for lines starting from 1 to 5 hp. 230 and 550-volt motors on ap-

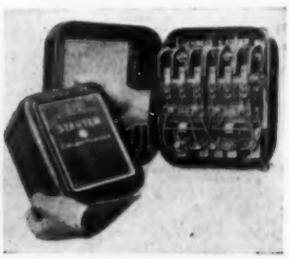


plications requiring the U. S. Bureau of Mines approval as "permissible" equipment, and is thus suitable for hazardous plant locations. This magnetic starter is explosion-tested and is provided with an inverse time-limit overload protection and a thermal overload relay. The explosion-proof compartment is made from ¼ to ⅜-in. sheet steel. Dimensions are 13½ x15½x8 in.

Starter, Reversing, for Small Motors

Cutler-Hammer, Inc., 205 North 12th St., Milwaukee, Wis. [Vol.74,p.885.] 365.

An across-the-line type of reversing starter for d.c. and a.c. polyphase motors up to 3 hp.



has been announced. Reversing is accomplished by means of two mechanically interlocked magnetic contactors, which are controlled by means of a separate push-button master station. The starter is 7 7/16 wide by 8 7/16 in. high by 4 7/16 in. deep.

Starter, Manual, Across the Line, Bull. 9115

Cutler-Hammer, Inc., 205 North 12th St., Milwaukee, Wis. [Vol.74,p.924.] 377.

A three-pole, across-the-line, manual starter for a.c. squirrel-cage motors up to 2 hp. is announced. This Bull. 9115 starter has the following features: Small size: thermal overload relays; all poles trip on overload; twin-break, silver-to-silver, butt-type contacts; easy operation, and a cover interlock. The starter is 4 7/16 in. wide by 8 7/16 in. high by 3 7/8 in. deep.

Filter Unit, Power

Square D. Co., Detroit, Mich. [Vol.74,p.924.] 384.

For supplying a steady flow of d.c. power from an a.c. supply in relatively large capacities this power filter unit is particularly suitable for magnetic chucks and eliminates the necessity for maintenance of motor-generator sets or converters. In addition, the power unit is of such compactness as to permit building it into the base of the machine.

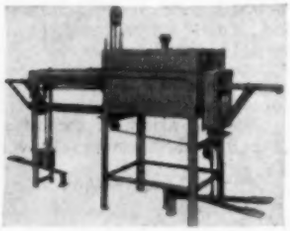
Furnace and Oven Equipment

Furnaces, Electric, Special-Atmosphere, "Preeco"

Process Engineering & Equipment Corporation, Attleboro, Mass. [Vol.74,p.299.] 94.

Prevention of exodiation and the formation of scale by the use of a gas, a mixture of gases, or a vapor to exclude air is the principle employed for the "Preeco" special-atmosphere electric furnaces.

The design of the furnace is



usually special and is based on a consideration of three factors: First, the application of the most suitable atmosphere; second, control of the atmosphere to insure the maximum economy; and third, efficient design. The furnace is built in such types as box, conveyor, continuous-hearth, pot, and continuous strip and wire.

Furnaces, Nitriding, Batch-Type

General Electric Co., Schenectady, N. Y. [Vol.74,p.337.]

The vertical furnace consists of an outer shell containing the heating units and an inner retort, which is inserted into the furnace through the top. The

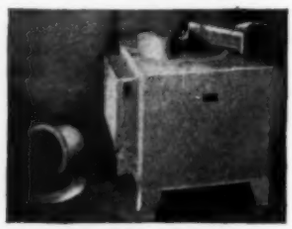
retort is made in two parts, the upper part containing the motor and fan and the lower the charge to be nitrided. Inlet and outlet for the ammonia are through the cover, so that the complete retort can be withdrawn from the furnace at the end of the nitriding cycle and allowed to cool outside. This furnace is available in two sizes, rated at 23 and 30 kw.

The box-type furnaces require little headroom and comparatively small floor space. Two sizes are available—40 and 30 kw. A charging truck can be supplied for handling the steel retort.

Furnace, Crucible and Pot, Electric, 200-Lb.

Sentry Co., Taunton, Mass. [Vol.74,p.484.] 147.

A pot and crucible can be used interchangeably in the 200-lb. electric melting furnace. The furnace operates at tem-

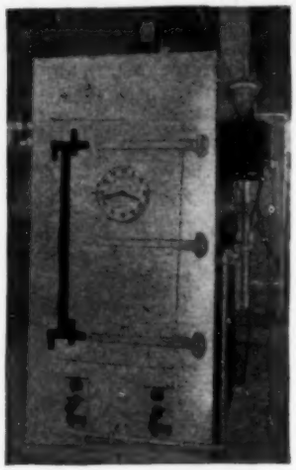


peratures to 2,400 deg. F. with the crucible and 1,800 deg. F. with the pot. Capacity is 200 lb. of brass alloy in about 1 hour and 20 min.

Oven, Drawing, Gas-Recirculating, Type H

Despatch Oven Co., 622 Ninth St., S.E., Minneapolis, Minn. [Vol.74,p.447.] 168.

Heat-treating and air-drawing requirements up to 1,600 deg. F. can be taken care of with this oven. Inside working space is 2 ft. wide, 3 ft. deep, and 4 ft. high, but can be changed. The oven is of the double-wall type reinforced with structural steel members, and utilizing a gas-heating system. Recirculation of the air by a fan saves fuel, inasmuch as the recirculated air need only be

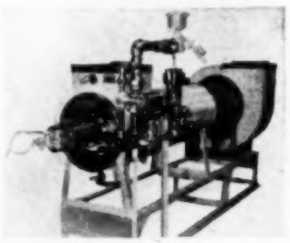


raised 5 to 10 deg. Uniformity of temperature in the working chamber is kept within plus or minus 5 deg. F.

Oven Heater, Oil-Fired

Paul Maehler Co., 2208 West Lake St., Chicago, Ill. [Vol. 74,p.415.] 162.

An oil-fired industrial oven heater similar to the gas-fired universal heater (*A.M.*—page 416, Vol. 73) has been built. Air drawn from the oven at a high temperature is reheated and tempered with a controlled volume of fresh outside air. Ex-



plosive vapors are incinerated in the heater instead of being allowed to collect in the oven.

The heater may be located at any desired point above, beside or below the oven. It is available in five sizes with air delivery capacities from 3,000 to 12,000 cu.ft. per min., and B.t.u. deliveries from 450,000 to 3,000,000.

Oil Burner, Rapid-Heating

Naudain Manufacturing Co., 1001 Rectory Lane, Baltimore, Md. [Vol.74,p.417.] 155.

For heating of welding, forging and melting furnaces, this fuel-oil burner is designed to operate on 10- to 14-oz. air pressure. With slight alterations of the inner tube, the burner can be used on low-pressure air by using high-pressure air for atomizing, or low-presure air

and steam for atomizing. The body is mounted on a bracket, which permits the burner to be removed without dismantling the large air pipe. The air is thoroughly mixed with oil and passes through a conical bushing, which regulates the amount of mixture required.

Pyrometer, Contact-Type, "Pyro Lance"

Illinois Testing Laboratories, Inc., 141 West Austin Ave., Chicago, Ill. [Vol.74,p.261.] 53.

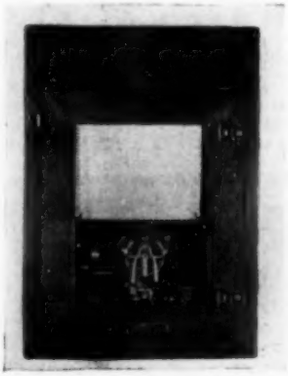
Temperatures of heated metals having low surface hardness can be taken with the "Pyro Lance" contact-type pyrometer. The meter has a

case diameter of 4½ in., with a scale 3½ in. long The indicator can be furnished in several different temperature ranges although the 0 to 2,000 deg. F. range is generally required. Over-all length of the instrument is 36 in., and the weight is about 3 lb.

Pyrometer Controller, Anticipatory

Leeds & Northrup Co., 4901 Stenton Ave., Philadelphia, Pa. [Vol.74,p.264.] 71.

When the temperature begins to depart from the control setting, the controller moves the fuel valve in the proper direction and also starts an open clutch to rotating toward its closed position in anticipation of the possibility that the first valve motion may not be great



enough. If it is great enough, however, the clutch stops. Othewise, the clutch engages a motor which shifts the normal position of the valve. As soon as the trend is toward the control limits, the controller automatically anticipates the danger of overshooting and again shifts the normal position of the valve.

Pyrometer, Indicating, Improved, "Tycos"

Taylor Instrument Companies, Rochester, N. Y. [Vol. 74,p.519.] 199.

The weight of the instrument has been decreased by 3 lb., and it has been made more quiet in operation. Elimination of the back panel simplified wiring.

Pyrometer, Potentiometer-Type, Improved

Brown Instrument Co., Philadelphia, Pa. [Vol.74,p.956.] 305.

This instrument is available in indicating, recording, multiple-recording and controlling types. The galvanometer has been designed for uniform response under all operating con-

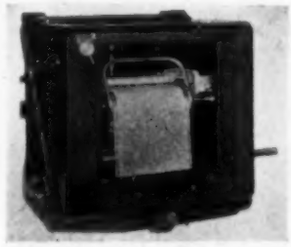
ditions. A humidity compensator offsets errors arising from expansion and contraction of the strip paper charts.

The dustproof case is suitable for wall mounting, front-of-board mounting, flush-type panel mounting or table mounting. Automatic control is obtained through mercury switches which handle up to 50 amp. at 220 volts.

Pyrometer, Recording, Improved, "Tapalog"

Wilson-Maeulen Co., Inc., 383 Concord Ave., New York, N. Y. [Vol.74,p.959.] 342.

These recording pyrometers for single and multiple records are operated by an industrial-type synchronous-electric clock

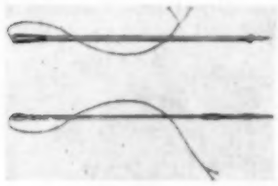


motor. All models have automatic, electric, cold-junction compensation. Recording pyrometers employing thermocouples and electric resistance thermometers employing resistance bulbs, of both single- and multiple-record types, are offered.

Thermocouples, Molten-Metal

Brown Instrument Co., Philadelphia, Pa. [Vol.74,p.413.]

To measure temperatures below the surface of molten metals and to indicate the temperatures within a few seconds



are the requirements met in these thermocouples. The type for brass and bronze consists of a sensitive thermocouple mounted in a replaceable protecting tip made of a special alloy. Accurate readings will be obtained in approximately 25 seconds.

For molten aluminum, bare thermocouple wires project beyond a replaceable tip. As the thermocouple wire is consumed, the operator feeds new wire to the tip by sliding forward the button midway up the tube.

Tubing, Compensated, for Temperature Instruments, "Tyco"

Taylor Instrument Companies, Rochester, N. Y. [Vol. 74,p.666.] 244.

To eliminate error in the functioning of temperature instruments, particularly from the effect of external temperature conditions surrounding the tubing, these companies have produced a capillary tubing with compensating qualities. Essentially, the method consists of so proportioning the volume of mercury in the tubing to its coefficient of expansion and to the size of the alloy wire, that any change in the volume of mercury resulting from external temperature changes is accurately compensated.

Material Handling Equipment

Crane, Revolving Boom, "Loadmaster"

Bucyrus-Erie Co., South Milwaukee, Wis. [Vol.74,p.702.] 258.

This company has taken over the manufacture and sale of the "Loadmaster" revolving boom crane, formerly sold by Fred-

eric H. Poor, Inc., New York City. This mobile crane, with a boom swing of 360 deg., has a rated capacity of 3,500 lb. The maximum working reach is 16 ft. The machine may be mounted either on crawlers or on rubber-tired wheels.

Cranes, Portable

Lewis-Shepard Co., Watertown Station, Boston, Mass. [Vol.74,p.561.] 223.

Four types of portable cranes have been developed. The type illustrated has both the boom and main upright hinged. This crane can be taken through

doorways and yet can be used to the ceiling. A telescopic type machine is also manufactured.

A revolving hinged type, which will swing through an arc of 360 deg., and a revolving telescopic type are the remaining two designs. All these machines can be furnished with a worm-drive, hand winch, a spur-drive hand winch, or an electric winch. Standard capacities are up to 2,000 lb.

Crane Control

General Electric Co., Schenectady, N. Y. [Vol.74,p.343.] 82.

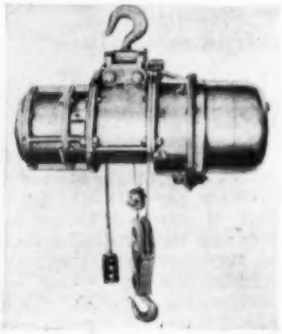
This pendant-type, push-button control is designed to supersede the present rope and

chain types of control, with the advantages of greater safety to the operator, saving in time (only one man being necessary to operate the crane), and less aisle space required.

Hoist, Electric, Type W

Wright Manufacturing Co., Bridgeport, Conn. [Vol.74,p. 448.] 158.

The Type W electric hoist is available in models from ¼ to 10 tons. Alloy steel shafts, drop-forged, heat-treated gears

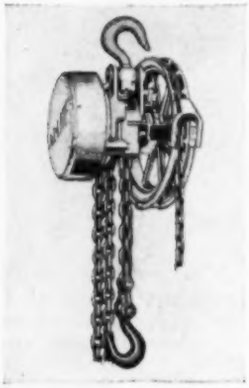


and pinions, and "Tru-Lay" preformed cable are employed. The hoists are designed for different types of suspensions and are furnished with either push-button or pendant rope control.

Hoist, Chain, "Al-Lite"

Chisholm-Moore Hoist Corporation, Tonawanda, N. Y. [Vol.74,p.597.] 227.

Aluminum alloys are used in the "Al-Lite" chain hoist, which is one-third lighter than if made of steel. Among its features



are corrosion-resistance, portability, Alemite lubrication, accessibility, ball bearings, planetary-type gears, dust-proof housing, and adjustable brake.

Hoists, Electric, ¼- and ½-Ton

Sprague Electric Hoist Division of the Shepard-Niles Crane & Hoist Corporation, Montour Falls, N. Y. [Vol.74,p.777.]

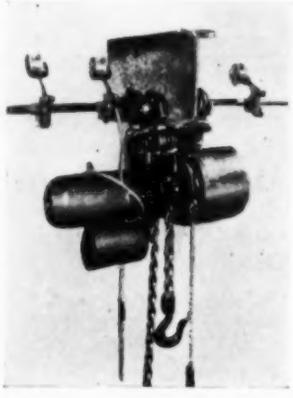
This hoist features compactness, close headroom, and a simple worm drive. Wiring is

entirely inclosed. The control may be either by a pendant rope or by means of a push-button. The trolley is of the swivel type with ball-bearing wheels.

Hoist, Electric, Improved, Universal, "Mac"

McCollum Hoist & Manufacturing Co., Downers Grove, Ill. [Vol.74,p.919.] 358.

The hoist is made in capacities from 500 to 4,000 lb. and can be had in either the hook or trolley type. Balanced on either side of the chain sheave

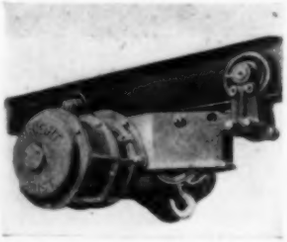


are the motor and controller and the gear reduction unit. Either d.c. or a.c. motors are available for 2- or 3-phase, 60-cycle circuits, and with voltages up to 550.

Hoists, Electric, Low-Headroom

Wright Manufacturing Co., Bridgeport, Conn. [Vol.74,p. 995.] 421.

For the hoist of ½-ton capacity, the minimum distance from the bottom of the I-beam to the hook is 11 in.; for the 1-ton hoist, 13 in. Drums and sheaves are of ample size to avoid excesively sharp bending of the cable. Push-button or pendant rope control are optional. The equipment includes a safety limit switch, a safety load block, positive mechanical brake, heat-treated forged gears, and preformed wire cables.



Truck, Lift, Hydraulic

Lyon Iron Works, Greene, N. Y. [Vol.74,p.520.] 204.

Capacity of this hydraulic lift truck is 6,000 lb. The handle may be turned a full 360 deg., and the operator can elevate or lower the load from any position.

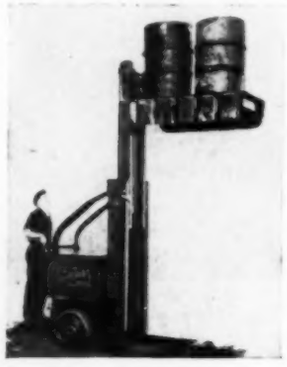
The truck is available in the Model N with a 17-in. wide

platform and in the Model W with a 26½-in. wide platform. Lowered heights range from 6 to 7 in., for the first type and from 7 to 11 in. for the second type. Platforms range from 30 to 42 in. for the first type and from 42 to 60 in. for the second type. Vertical lift is 3 in. for all sizes.

Trucks, Lift, Telescoping

Elwell-Parker Electric Co., Cleveland, Ohio. [Vol.74,p. 596.] 226.

Machines of the three- or four-wheel type are available, and capacities range as follows: 3,000, 4,000 and 6,000 lb. with



7- or 11-in. platforms and tier to a height of 10 ft. The secondary uprights telescope or slide down inside the stationary uprights to clear doorways.

Trucks, Lift, Type EL

Mercury Manufacturing Co., 4118 South Halsted St., Chicago, Ill. [Vol.74,p.776.] 293.

Two types of lift trucks, both having approximately the same general dimensions and capacity of 6,000 lb., the one cap-

able of raising the platform to 62¼ in. and the other to 23 in. above the floor, have been announced. The feature is the application of a hydraulic hoist for platform elevation. Raising is accomplished by push-button control of the separate, series-wound driving motor. Lowering is accomplished by means of a throttle valve.

Truck, Lift, Model H, "Red Giant"

Revolvator Co., 336-352 Garfield Ave., Jersey City, N. J. [Vol. 74,p.810.] 324.

The Model H-2 is 18 in. wide and is built in platform lengths from 30 to 54 in. to give load capacities from 2,500 to 5,000 lb. The Model H-3 is 26½ in.

wide and has load platforms from 36 to 72 in. to give load capacities from 2,500 to 5,000 lb. Standard lift is 1¾ in. Among the features are: A rolling cam release to give easy operation; central suspension; a non-kicking tongue; a double (intermediate) latch; and a welded rear link unit.

Trucks, Lifting-Type, "Truclift"

Clark Tructractor Co., Battle Creek, Mich. [Vol.74,p. 1002.] 430.

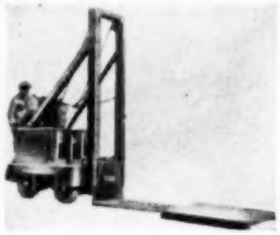
A lifting-type power truck in 3- and 4-ton models has been developed to be turned to a sharp angle to permit entering a freight car and spotting the load at the far end. A locomotive-type cast-steel frame, full-floating rear axle, hydraulic lifting mechanism with automatic control and a tractor-type gas engine are features. The 3-ton truck has a narrow plat-

form to accommodate U. S. standard 12-in. under-clearance skid platforms.

Truck, Elevating, Model B, "Tee"

Terminal Engineering Co., 17 Battery Place, New York, N. Y. [Vol.74,p.412.] 133.

This four-wheel drive, skid-handling truck is small enough to work in box cars, yet carries loads of 3,000 lb. in an overhung position. The skid height



need only be 2 in. The elevating speed varies from 25 to 40 ft. per min., but may be increased to 60 ft. per min. with a high-speed hoist motor. The truck is operated from a storage battery.

Truck, Tiering, Die-Handling, 25-Ton

Elwell-Parker Electric Co., Cleveland, Ohio. [Vol.74,p. 631.] 241.

For transporting automobile body dies from storage to the presses, this electric tiering truck weighs approximately 13,000 lb. and is powered by a gas-electric unit. It has capacity

for 25 tons. The platform has no support at the forward end, and thus is a cantilever-type load platform. The load is carried on two L-shaped steel arms for raising and lowering the die to and from the press.

Truck, Midget, "Hercules"

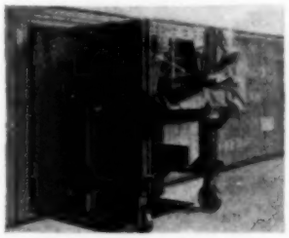
Illinois Iron & Bolt Co., Carpentersville, Ill. [Vol.74,p.488.]

The truck is compact and may be set anywhere ready for instant use. Features are: rubber-tired wheels, rubber hand grip, battleship gray color, and an adjustable hook. The tubular steel handle is strongly reinforced. The weight is about 27 lb. and the capacity 400 lb.

Box-Car Loader, "Edwards"

Signode Steel Strapping Co., 2600 North Western Ave., Chicago, Ill. [Vol.74,p.343.] 80.

For lifting and carrying bundles of sheet metal into and out of box cars, this box-car loading machine is said to load a 40-ton car with one man in less



than 30 min., and has reduced the cost to 2 cents per ton. Two 20-in. bundles of sheets, one on top of the other, may be handled at one time with ease. The operator does not leave his seat to load, hoist, travel forward or backward, enter or leave a freight car.

Ball Transfer

Mathews Conveyor Co., Ellwood City, Pa. [Vol.74,p.921.]

For moving heavy objects in any direction in a horizontal plane, this ball transfer features a dust and dirt cap which rests loosely against the ball. This dust cap is locked loosely in position by a spring retainer. Models for plate and pipe mounting are available in capacities of 200 and 500 lb.

Chain, Conveyor, Universal, No. 77

Link-Belt Co., 910 South Michigan Ave., Chicago, Ill. [Vol.74,p.919.] 389.

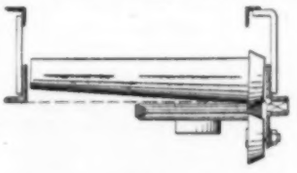
The universal No. 77 conveyor chain will curve sideways around corners and "S" curves radius as small as 24 in. It may be used on sprockets as

small as 7½ in. pitch diameter. The barrel of the link contains a universal joint that permits the sidewise flexing of the chain. In any position a long bearing of pin and bushing is assured.

Conveyor Curves, V-Belt-Driven, Live-Roller

Standard Conveyor Co., North St. Paul, Minn. [Vol.74,p.926.] 392.

This type of drive makes every roller in the curve power driven. Two bevel-faced idlers, one attached to the roller and the other idling, form the

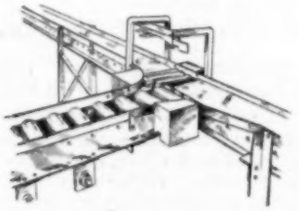


groove in which the V-belt travels. The V-belt drive also assures quiet operation. Both 90- and 180-deg. live-roller curves can be installed.

Diverter for Conveyors, Selective

Standard Conveyor Co., North St. Paul, Minn. [Vol.74,p.962.]

The tote boxes are provided with a series of buttons on the forward edge. The raised button makes contact with the selecting mechanism shown and is swung so that it engages with the proper lateral conveyor line. A special feature of this automatic diverter is that jamming is prevented in the event of one of the lateral lines being filled. In this case the tote box continues on the main conveyor.



Skid Platforms, Aluminum

Youngstown Pressed Steel Co., Warren, Ohio. [Vol.74,p. 961.] 369.

Aluminum skid platforms, both acid and corrosion-resistant, have been developed in conjunction with engineers of the Aluminum Company of Ame-

erica. The photograph illustrates a skid 36x52x12 in., which weighs 65 lb. Under test this skid platform carried a load of 8,200 lb. without signs of damage. As shown, these skids can be picked up easily.

Tractor, Industrial, Type "D"

Mercury Manufacturing Co., 4118 South Halstead St., Chicago, Ill. [Vol.74,p.809.] 328.

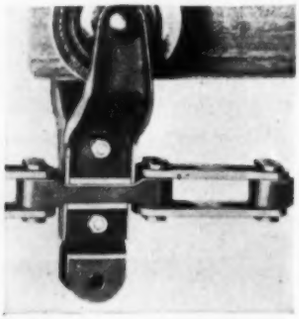
The machine will run light at 13.5 miles per hour and at this speed has a normal draw-bar pull of 750 lb. Draw bar pull in first speed with dual rear

wheels is 3,000 lb. The wheel base is 54 in., over-all length 85 in., and outside turning radius 104 in. With single tires the over-all width is 45 in.; 57 in. with dual tires. For the power plant the Ford Model-A industrial engine with the Model-AA truck clutch and 4-speed transmission have been selected.

Trolley and Chain, Conveyor

Saginaw Products Corporation, Saginaw, Mich. [Vol.74, p.559.]

The bracket assembly extends down through the chain link with the chain attachment lugs bolted directly to the bracket tongue. This tongue projects below the lower side of the chain. The assembly is made by the manufacturer. One bolt secures both lugs. The trolley operates with standard clearances on any 4-in. I-beam track. The No. 458 chain is interchangeable with the usual drop-forged No. 458 chain.



Wire Rope, Chrome-Nickel-Steel, "Korodless"

Hazard Wire Rope Co., Wilkes-Barre, Pa. [Vol.74,p. 415.] 114.

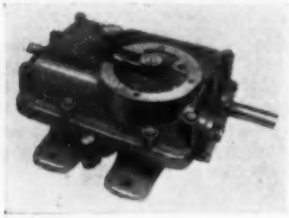
This rope is of Nirosta austenitic chrome-nickel alloy steel, therefore highly resistant to corrosion. It withstands temperatures up to 1,650 deg. F. Preforming the strands and wires in helical shape minimizes internal stress and allows individual wires to lie side by side without undue internal friction.

Transmission Equipment

Speed Reducers

The Adams Co., Dubuque, Ia. [Vol.74,p.30.] 13.

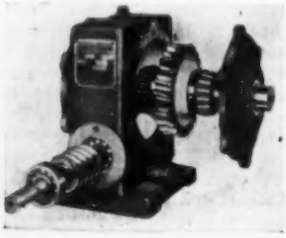
This variable-speed reduction box combines in one housing a speed reduction and a sliding gearbox mechanism, making the unit adaptable to any piece of equipment which it is desired to drive from a constant-speed motor. This unit incorporates four speed changes, which are obtained through a single shift lever. On the standard unit, the input and output shafts are in line, but when necessary, units can be furnished for right-angle drive.



Speed Reducers, Worm Gear, Small

Horsburgh & Scott Co., 5114 Hamilton Ave., N.E., Cleveland, Ohio. [Vol.74,p.303.] 104.

These reducers are designated as Series WB-600 and WB-700 and deliver maximum torques on the gearshaft of 1,100 and 2,140 in.-lb., respectively. Both are available in ratios from 4½ to 1 up to 60 to 1 and with wormshaft speeds from 300 to 3,000 r.p.m. Running at a wormshaft speed of 1,800 r.p.m., the 10 to 1 WB-600 reducer will have a horsepower rating of 2.1 and the WB-700 a rating of 2.6 hp.



Speed Reducer, Vertical, Worm Gear

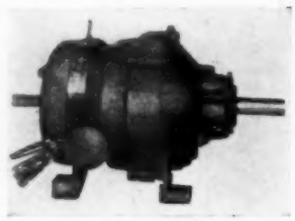
Dodge-Foote Corporation, Mishawaka, Ind. [Vol.74,p.484.]

The leakproof feature is incorporated in any of the standard vertical "Hygrade" units at a small additional cost. The vertical shaft is surrounded by an oil tight sleeve construction, and the lubricant does not extend above any joint so that leakage could occur.

Speed Reducer, Double-Shaft Extensions

Production Equipment Co., Cleveland, Ohio. [Vol.74,p.483.]

Any of the motorized speed reducers manufactured can be supplied with shafts extended at both ends. Either the same speed or different speeds can be had on the shaft extensions. The motorized speed reducer consists of a standard or special polyphase induction motor, mounted integral with spur, helical, planetary or bevel gears in an oil-tight casing. Shaft speeds range from 20 to 875 r.p.m.



Speed Reducers, Worm Gear, Series OH

W. A. Jones Foundry & Machine Co., 4401 Roosevelt Road, Chicago, Ill. [Vol.74,p.595.]

These Series OH reducers are built in ratios of 5 to 1 up to 50 to 1 and in capacities to 7 hp. They are also built for right-angle drive. The worm is a low-carbon, nickel-steel forging with the shaft integral. The worm gear is of nickel, phosphor-bronze alloy. A high-carbon-steel gear shaft is supplied with double projections. The reducer may, therefore, be connected from either side to the driven machine and may be used to drive an auxiliary.

Speed Reducer, Vertical, Spiral-Bevel-Gear

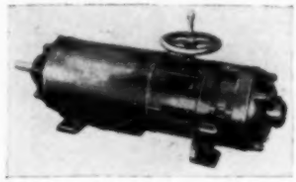
D. O. James Manufacturing Co., 1114 West Monroe St., Chicago, Ill. [Vol.74,p.847.]

The gears are made of chrome-nickel steel. Shafts are made of 0.40 carbon steel and roller bearings are provided on both shafts. Where large ratios of reduction are required, this type of reducer is made integral with a planetary reduction unit so that all ratios from 8 to 1 and 1,600 to 1 are available. They are made in sizes from ½ to 100 hp.

Variable-Speed Drive with Integral Motor

Stephens-Adamson Manufacturing Co., Aurora, Ill. [Vol. 74,p.32.] 2.

A variable-speed drive, which combines a motor, speed charger, speed reducer and control in a single housing, has been designed. This drive is made in sizes to deliver from ¼ to 7.5 hp. The motor section gives speeds between 24 to 144 r.p.m., or 120 to 720 r.p.m. The output speed is increased or decreased while the machine is in motion by simply turning the small handwheel on top.



Transmission, Variable-Speed, Inclosed

Reeves Pulley Co., Columbus, Ind. [Vol.74,p.524.] 165.

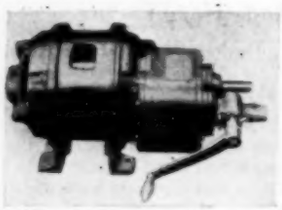
Standard internal operating parts of the Reeves transmission are now totally inclosed in a compact cast-iron housing. U-shaped recesses in the sides of the bottom section permit the removal, as a unit, of operating parts. Lubrication of all bearings is accomplished through forced-feed fittings located in two recessed panels at one end of the transmission.

The inclosed Reeves transmission is built in six sizes, covering from fractional to 10-hp. requirements in all speed ranges. It can be mounted on the floor, ceiling or in the vertical position.

Multi-Speed Drive, Westinghouse-Wise

Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. [Vol.74,p.560.] 221.

A four-speed reduction gear unit built in combination with a standard a.c. motor has been



developed. The speed of the reducer may be changed instantly while the motor is running at full speed and under full load. On the countershaft are four idling ring gears constantly in mesh with four gears fastened on the output shaft. Each countershaft gear is provided with an internal clutch. The clutch is actuated by two tapered wedges, which are forced between the clutch halves by a spring member. To bring this member to the correct position for a desired speed, the control handle is rotated. Between each speed is a neutral position. The drive is offered in three units, from ½ to 7½ hp.

Chain, Silent, Reversible, Side-Guide

Whitney Manufacturing Co., Hartford, Conn. [Vol.74,p. 338.]

This is a reversible silent chain that allows the direction of driving to be reversed and will drive on either or both faces. It is particularly adaptable to installations where lack of vibration is desirable, where

it is desired to drive several shafts in different directions of rotation or where it is necessary to install a chain take-up device.

The chain utilizes a double internal chain-link and sprocket-tooth engagement on either face on one row of links across the chain, with the supporting external engagement of the next row of links on either side of the internal contacting row.

Countershaft, Motorized, "One Profit"

Production Equipment Co., 5219 Windsor Ave., Cleveland, Ohio. [Vol.74,p.922.] 375.

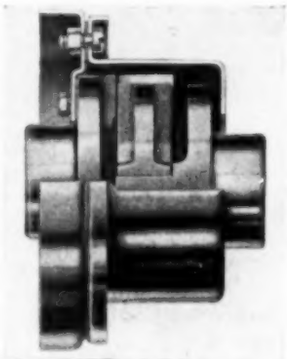
For motorizing belt-driven machine tools, this motorized countershaft is available in an

overhung type and a box type. It consists of a motorized speed reducer with an extended shaft and an outboard bearing. The unit can be supplied in ratings from ½ to 20 hp., in single or multi-speed designs, and for reversing or non-reversing service. It can be used for single- or cone-pulley applications.

Coupling, Flexible, Cross-Type, "Francke"

Smith & Serrell, Globe Indemnity Bldg., Newark, N. J. [Vol.74,p.342.] 118.

Shaft misalignment up to $\frac{1}{16}$ in. can be taken care of by the Francke cross-type flexible coupling for small drives. It also provides small endwise



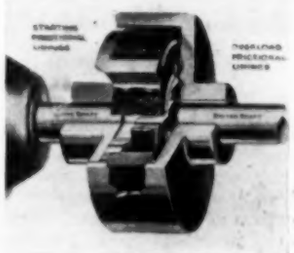
float and handles a limited amount of angularity. The three main parts are the two forged steel flanges and the cross. A pressed-steel grease cover is added.

The coupling is manufactured in four sizes having maximum bores from 1¼ to 1¾ in., and with ratings of 2 to 10 hp. at 1,150 r.p.m.

Coupling and Clutch, Flexible, Automatic-Starting, Rawson

Washburn Shops, Worcester Polytechnic Institute, Worcester, Mass. [Vol.74,p.557.] 191.

Between the cast-iron driving and driven members are floating segments made of brake lining reinforced with lead.



With the application of power, centrifugal force begins to act on the outer set of linings. A second set of centrifugal friction linings is introduced on the driven side.

This starter is usually applied to motors, but may also be applied to the driven unit. It can be arranged for direct connection, gear, chain, V-belt, or flat-belt drives. The coupling is built in sizes to transmit from 3 to 300 hp.

Couplings, Flexible, "Edmunds"

Crocker-Wheeler Electric Manufacturing Co., Ampere, N. J. [Vol.74,p.525.] 210.

Torsional resilience is provided in the Edmunds flexible coupling by using rubber balls. The coupling also takes care of misalignment and shock. The flange half has six cylindrical pockets and a circular groove. The spider has six projecting lugs, between which are placed the rubber balls. Balls occupy

the pockets in the flange, and the lugs of the spider occupy the groove. The lugs contact with the balls for flexible drive.

The coupling is made in shaft sizes from ½ to 3¼ in. to transmit from ½ to 35 hp. per 100 r.p.m.

Coupling, Chain-Type, Midget

Morse Chain Co., Ithaca, N. Y., [Vol.74,p.960.] 322.

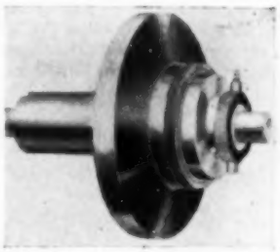
The "Midget" coupling is a miniature counterpart of the Morse chain-and-sprocket coupling on the market for some time. The "Midget" likewise

employs two sprockets wrapped by a chain. It is offered for shaft sizes up to 1 in. and is of all-steel construction.

Clutch, Friction

Dodge-Foote Corporation, Mishawaka, Ind. [Vol.74,p.629.]

In both the engaged and disengaged positions the clutch is fully inclosed. The laterally free friction disk is clamped between two steel disks, one keyed to the central shaft,



which may be either the driving or driven member. At its periphery the friction disk engages through interlocking serrations and slots the other rotating member in the form of a sleeve with a conical bell end. The sleeve has a key slot for attachment to a pulley, gear, or sprocket hub. Compression of the disk between the clutch faces is by three toggle members actuated by an internal cam, moved on the shaft by means of a slip ring and shifting yoke.

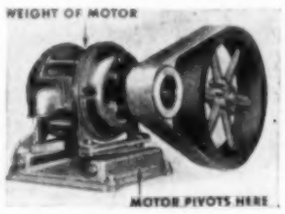
The friction disk consists of two ground asbestos disks.

Drive, Short-Center, Flat-Belt

Rockwood Manufacturing Co. Division of General Fibre Products, Inc., 1801-2001 English Ave., Indianapolis, Ind. [Vol.74,p.485.] 171.

This drive comprises a motor base, two pulleys, and a flat leather belt. Stock sizes from 1 to 50 hp. are designed for polyphase, 60-cycle, a.c. motors of any make.

The motor is mounted on a



free-swinging pivot, and its weight maintains uniform belt tension. The base may be mounted on the floor, wall, or ceiling, but the driven shaft must not be lower than the motor shaft.

Motor Drive, Floating

Kritzer Co., 515 West 35th St., Chicago, Ill. [Vol.74,p. 742.] 261.

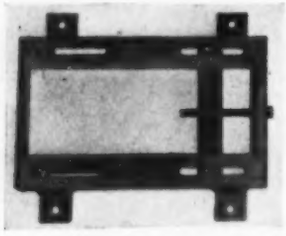
Short-center drives, either flat belt or V-belt, can be evolved. The driving motor

floats on the load, maintaining just sufficient tension on the belt to carry the load. Bases are stocked for motors from ½ to 25 hp.

Motor Base, Welded-Steel

Lincoln Electric Co., 12828 Coit Road, Cleveland, Ohio. [Vol.74,p.775.] 285.

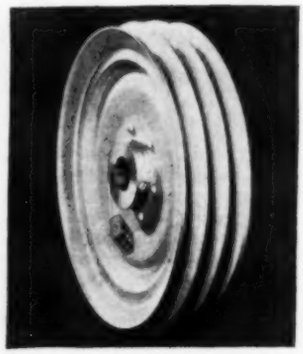
This welded-steel motor base is designed to be used instead of slide rails. It is constructed of rolled steel angles and flat bar stock fabricated by means of the electric arc. The flanges of the angles to which the motos is bolted are slotted to permit belt tensioning. At one end a screw adjustment is provided.



Sheaves "Texsteel"

Allis-Chalmers Manufacturing Co., Milwaukee, Wis. [Vol. 74,p.851.] 257.

Texsteel sheaves are die-pressed from tough steel, and then each section is welded both



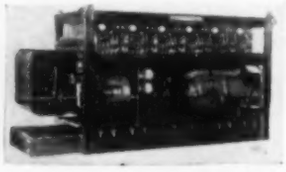
at the web and at the rim to eliminate vibration and noise, and to give accurate balance. They are manufactured in a large range of diameters, permitting ratios as high as 6:1.

Welding Equipment

Welders, Arc, Multiple.

Wilson Welder & Metals Co., Inc., North Bergen, N. J. [Vol.74,p.487.] 16.

Constant-potential, multiple-arc welders with capacities ranging from 400 to 1,500 amp., (one-hour ratings), have been developed. All of these ma-

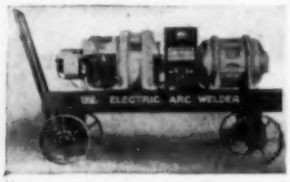


chines are four-bearing, single motor-generator types, and all have close control. Panels are mounted either on the frame or separately in any part of the plant.

Welder, Arc

USL Battery Corporation, Niagara Falls, N. Y. [Vol.74, p.483.] 187.

Only one adjustment is used on this full range arc welder. All current adjustments are made by a simple "electrode indicator," set by the operator for the electrode being used. A high striking voltage of 60 volts is provided and is constant for all commercial sizes of electrodes, either bare or coated.



Blowpipe, Aircraft-Welding, Type W-107, "Prest-O-Weld"

Linde Air Products Co., 30 East 42nd St., New York, N. Y. [Vol.74,p.414.] 153.

Although the Type W-107 welding blowpipe has been designed primarily for airplane fuselage welding, it is suitable for light welding work of all kinds. In design and appearance, it is somewhat similar to the "Oxweld" Type W-15 blow-

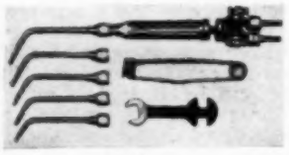
pipe, but operates on the medium-pressure principle. The blowpipe is 10½ in. in length, weighs 10 oz., and is balanced. Six tips are available.

Blowpipes, Types W-105 & 6.

Linde Air Products Co., 30 East 42nd St., New York, N. Y. [Vol.74,p.630.] 243.

A detachable valve body, to which the handle is secured by a simple locking device, enables the operator to change quickly from the standard to different handles without detaching the hose or hose connections and without the use of a wrench. Types W-105 and W-106 welding blowpipes are medium-pressure types.

Ten different sizes of tips, Nos. 4 to 13 inclusive, are avail-



able for use with the Type W-105 handle. The Type W-106 blowpipe is smaller, and supplied with five sizes of tips, Nos. 3 to 7.

Electrodes, Fluxed, "Ductone"

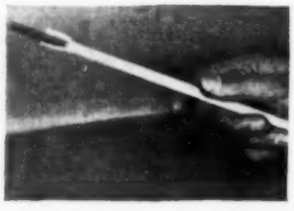
Fusion Welding Corporation, 10257 Torrence Ave., Chicago, Ill. [Vol.74,p.445.] 135.

The surface slag remaining on a weld is rather heavy, but it is quite brittle and strictly non-adherent when cold and can be brushed off readily. Arc voltage may be doubled over that employed with a bare steel electrode. Tests indicate tensile strength of over 75,000 lb. per sq.in., and elongation of over 40 per cent. The flux is applied as a coating to various carbon and alloy steel rods and non-ferrous metals, all marked distinctively.

Electrode, Coated, Type R

General Electric Co., Schenectady, N. Y. [Vol.74,p.449.]

A 0.13 to 0.18 carbon-steel electrode covered with a heavy cotton braid impregnated with an arc stabilizing flux has been



placed on the market. This electrode, designated as Type R, is available in diameters from ⅛ to ¼ in., and in 18-in. lengths. Metal deposits of this electrode have high tensile strength and will produce a homogeneous structure.

Electrode, "Stainweld A"

Lincoln Electric Co., Cleveland, Ohio. [Vol.74,p.525.] 215.

This extruded electrode, known as "Stainweld A," is employed with reversed polarity. The coating contains no carbon, thus avoiding absorption of carbon in the weld metal. Welds are protected by a "shielded arc." A tensile strength of 96,000 lb. per sq.in. has been produced. Ductility is sufficient to permit a 180-deg. bend. Electrodes are manufactured in 3/32- to ¼-in sizes in the regular 11-in. lengths.

Rod, Hard-Facing

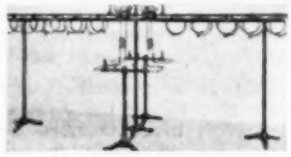
Armite Laboratories, 318 West Ninth St., Los Angeles, Calif. [Vol.74,p.628.] 236.

The No. 1 has less toughness than others. No. 2 is extremely tough, has the characteristics of No. 1 and Special, with the exception of extreme hardness. It can be forged and is impact-proof. Armite Special has a free, clear flowing quality, low conductivity, a good plastic range, and is non-oxidizing even at the melting point of 2,300 deg. F. The Brinell hardness of the three types is as follows: No. 1—682; No. 2—415; and Special—503. Hard-facing material in finely divided form is also available.

Gas Manifold, 20-Tank

Alexander Milburn Co., 1416-28 West Baltimore St., Baltimore, Md. [Vol.74,p.298.] 105.

Intended as a central source of supply for cutting and welding torches, this 20-tank manifold is constructed of bronze



tubing and employs Milburn standard gas regulators and copper coils, mounted on a tripod. Each tank or each side of the manifold may be operated independently through separate shut-off valves.

Welder's Helmet

William Schirmer, 1318 East Roosevelt St., Phoenix, Ariz. [Vol.74,p.34.] 8.

A welder's helmet, of which the eye panels can be operated by movement of the wearer's chin, has been developed. A black fiber mask carries the metal eye-panel, opening upward on spring hinges. Inside the mask, a padded chain pedal operates an expansion lift-bar, which folds up. The helmet is adjustable at three points, and may thus be made to fit any head. Ventilation is also assured.

Goggles, No. 12, "Oxweld"

Linde Air Products Co., 30 East 42nd St., New York, N. Y. [Vol.74,p.742.] 291.

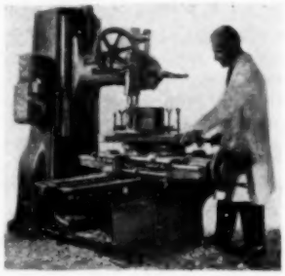
The No. 12 Oxweld goggles have eyepieces joined with a leather strap, adjustable by means of a metal buckle. Vision has been increased by the use of a 50-mm. lens instead of a 47-mm. lens. New green lenses, known as the "A" type, are available in three different shades.

Woodworking Equipment

Milling Machine, Pattern, "Wadkin Jr."

Oliver Machinery Co., Grand Rapids, Mich. [Vol.74,p.339.]

This machine offers these characteristics: flexibility for geometric and irregular patterns; a range of adjustments and quick action, fine feed motions. The overhanging arm is



movable vertically. Distance between the cutter spindle and the frame is 28 in. When the spindle is horizontal, the maximum distance between the cutter spindle and the work table is 18 in., reduced to 15 in. when swiveled to the vertical position. Spindle speeds are 4,300 and 2,700 r.p.m. Longitudinal table traverse is 44 in., and lateral traverse, 22 in. The table may be rotated.

Router, Type B, "Uniquip"

Unit Electric Tool Co., Inc., 302 West Water St., Syracuse, N. Y. [Vol.74,p.887.] 314.

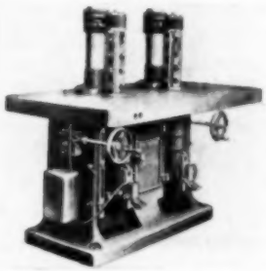
Power input of almost 1 hp. is furnished with the "Uniquip" Type B router, even though the weight is only 8½ lb. The motor is completely inclosed. Oversize oil-seal bearings are used at both front and rear. Features are the depth adjustment and the hardened and ground tool-steel chuck.

Shaper, Wood, Double-Spindle,

Oliver Machinery Co., Grand Rapids, Mich. [Vol.74,p.667.]

This machine is similar to the No. 287 shaper, but has double spindles, and is especially suitable for heavy-duty, autobody or pattern-shop use. The machine is capable of producing any kind of rabbetting, grooving, fluting, routing and shaping.

The 11-in. holes in the table are fitted with three rings, the smallest being 2 in. The ball-bearing spindles and motor



units, sliding on gibbed ways, can easily be removed through the 11-in. holes. The table measures 66x36 in., and the spindles are placed at 24-in. centers.

Shaper, Wood, Type B, "Uniquip"

Unit Electric Tool Co., Inc., 302 West Water St., Syracuse, N. Y. [Vol.74,p.851.] 315.

This shaper is made by attaching the firm's router to the underside of the table. The spindle is always vertical so that

all shaped edges are uniform regardless of contour. A ½-in. spindle, 2¾ in. long, fits into the ground, tool-steel chuck of the router and holds the shaper cutters. A ¼-in. spindle may be supplied if desired. Spindle speed is 17,000 r.p.m.

Parts and Mechanisms

Asbestos Tape, "Button Hole"

Garlock Packing Co., Palmyra, N. Y. [Vol.74,p.697.]

A gasket material, under the name of "Button Hole Tape," is being manufactured to replace the asbestos tape used on locomotive front ends and on flanged tanks of large diameter.

It is made up of two parallel courses of folded asbestos cloth, joined together by a single ply of bonding fabric. Insertion of a knife blade between the sections cuts the bonding fabric, forming a button hole which slips readily over a bolt or stud.

Ball Bearings, "Hi-Speed," Parker

Majestic Tool & Manufacturing Co., Detroit, Mich. [Vol.74,p.666.] 250.

Four-point contact of the balls on the raceways is the feature of these ball bearings, which are built especially for

use with grinding spindles. They are made in eight sizes with bores of 0.375 to 1.625 in.

Ball Bearings, "Duoseal"

Hoover Steel Ball Co., Ann Arbor, Mich. [Vol.74,p.847.] 332.

The "Duoseal" bearing consists of the standard Hoover annular bearing with stamped metal plates on each side of the

raceway. These plates are fitted tightly to the outer ring and remain stationary with it. The inner edge of the plate fits a special groove in the inner ring, allowing it to turn freely with the shaft and at the same time maintaining an effective grease seal. These bearings are available in standard S.A.E. sizes.

Ball Bearings, Single-Row, Wide-Inner-Ring

Standard Steel & Bearings, Inc., Plainville, Conn. [Vol. 74,p.960.] 307.

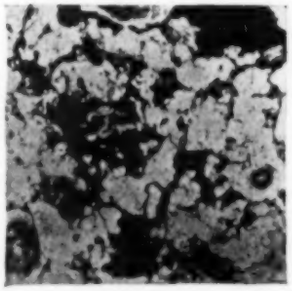
The Type SRB wide-inner-ring single-row bearings are of the same design and dimensions as the single-row maximum capacity bearings, except that the inner ring has the same width as that of the double-row bear-

ing of corresponding sizes. The additional width of the inner ring permits the bearing to be used without a locknut.

Bearing Material, "Oilite"

Amplex Manufacturing Co., 7900 Joseph Campau Ave., Detroit, Mich. [Vol.74,p.267.] 91.

This material is an alloy of copper, tin and other metals, and is used for the so-called "oil-less" bearings. It contains



40 per cent of oil by volume. It imparts a high polish to shafts, instead of scoring them, and can be made to a high standard of accuracy for bore.

Bearings, Hard-Bronze

Bunting Brass & Bronze Co., Toledo, Ohio. [Vol.74,p.775.]

Bushings and bearings made of a hard, low-friction, phosphor-bronze alloy are offered

for applications where hardness and ability to withstand pounding are particularly essential, together with the low friction and minimum wear assured by a lead content varying from 5 to 25 per cent.

Bearing, Oil-Circulating, "Robins-Jones"

Robins Conveying Belt Co., 15 Park Row, New York, N. Y. [Vol.74,p.887.] 266.

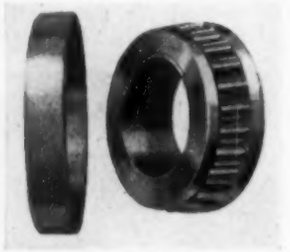
Automatic circulation of the oil from a well in the base of the bearing, around the shaft, and back to the well again is provided in the Robins-Jones bearing. Oil is drawn up by the rotation of the shaft through a series of ducts or

passageways in the bearing metal, the oil thus being spread uniformly over the whole shaft. At the parting of the cap and base, there are slots from which scavenger holes return excess oil back into the reservoir. Grooves near each end of the bearing lead the oil that works out to the ends back into the reservoir.

Bearings, Roller, Tapered, Cageless

Tyson Roller Bearing Corporation, Massillon, Ohio. [Vol. 74,p.631.] 235.

Cageless tapered roller bearings interchangeable with conventional ball and tapered roller bearings have been placed on the market. Positive roll align-

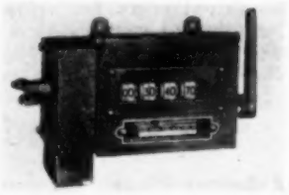


ment is attained by the use of a double-ribbed backplate at the big end of the rolls. The shoulder of each roll gets a bearing on the inside rib of the backplate and an additional bearing on the ouside rib. Pintles at both ends hold the rolls in place when the cup is removed. The bearings are made in all S.A.E. sizes.

Counter, Predetermining

Veeder-Root, Inc., Hartford, Conn. [Vol.74,p.229.] 28.

This Root-type predetermining counter can be set to any desired number within its ca-



pacity, and will, when the number is reached, make or break contact in an electric contactor.

The counter itself has two sets of figure wheels; counting wheels and predetermining wheels. Upon operation of the counter, the counting wheels advance, the predetermining wheels subtract, and when they read the same the electrical circuit is operated.

Gage Protector

Champion & Barber, Inc., 576 Subway Terminal Bldg., Los Angeles, Calif. [Vol.74,p. 957.] 363.

Protection to gages used on air and hydraulic lines is afforded by this gage protector. It is comprised of a three-part, bronze-bodied, rubber-bulbed

pressure transmitting instrument, which is filled with glycerine or castor oil, and is at all times in direct contact with the exterior line pressures and the interior bulb fluid pressures.

Gears, "Philweld"

Philadelphia Gear Works, Erie Ave. and "G" St., Philadelphia, Pa. [Vol.74,p.667.] 268.

Welded steel gears ranging in diameter from 15 to 168 in. are now being manufactured.

Rolled S.A.E. 1040 steel plate is used for the rim, center plate and arms. After all welding is done, the fabricated gear is normalized.

"Philweld" gears are available in spur, helical, herringbone, beval, spiral and Sykes continuous-herringbone types. They are also available in the company's line of heavy-duty speed-reducers.

Gear Blanks, Welded, Rolled-Steel

Lukenweld, Inc., Division of Lukens Steel Co., Coatesville, Pa. [Vol.74,p.810.] 331.

All-welded, rolled-steel, annealed gear blanks for use in the manufacture of cut gears are available in any size from

24 in. O. D. up. Rims can be furnished in steels of special analyses if desired. Advantages are the homogeneity of the annealed rolled steel and freedom from blowholes, gas pockets, and hard or spongy spots, which interfere with machining.

Lockwasher, "Everlock"

Thompson-Bremer & Co., 1640 West Austin Ave., Chicago, Ill. [Vol.74,p.924.] 399.

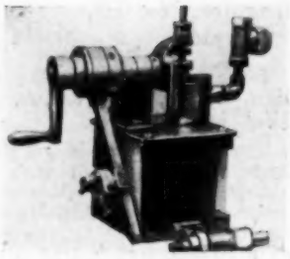
The "Everlock" lockwasher has die-formed teeth that are hardened and heat-treated. The

shape of the teeth causes the lockwasher to hold the nut firmly against severe vibration.

Lubricators, Improved

Hills-McCanna Co., 2349 Nelson St., Chicago, Ill. [Vol.74, p.31.] 11.

The "Kam-Klutch," or ratchet-type driving mechanism, can now be obtained on this type of lubricator. A "Kam-Klutch" is comprised of spring-held rollers embodied in a housing to work with and against the

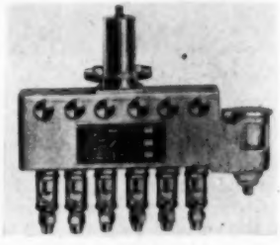


crankshaft when operating. The drive permits attachment to the high-speed driving arms in any position within a complete circle, and likewise gives the lubricator greater speed in oil delivery. This drive is interchangeable with the former ratchet drive.

Oiler, Automatic, Multiple, with Gravity Feed

Gits Bros. Manufacturing Co., 1846 South Kilbourn Ave., Chicago, Ill. [Vol.74,p.923.] 401.

Controlled amounts of oil varying from $\frac{1}{4}$ to 10 drops are delivered by gravity to each bearing regardless of the viscosity of the oil, as long as it will flow through passages never less than $\frac{1}{16}$ in. Each oiler is made in eleven sizes



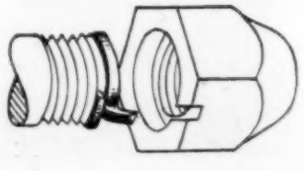
having from two to twelve leads, and is intended to be located within 3 ft. of the bearings. It is possible to operate as many as a hundred oilers simultaneously from a single source, and where desirable a different grade of oil may be used in any one of them to suit conditions.

Operation can be by air, solenoid, electric motor, link connection to the machine being lubricated, or by hand.

Nut, Brake-Lock

Safety Nut Corporation, Land Title Bldg., Philadelphia, Pa. [Vol.74,p.774.] 337.

This nut has a small aperture at the bottom, in which the end of the brake lock band is inserted and held. As soon as the nut is turned, the band slips and

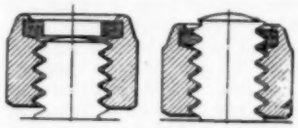


commences a spiral descent, while firmly hugging the sides of the thread. When an effort is made to withdraw the nut the expanding brake lock band sets up a resistance which requires a wrench to overcome.

Nuts, Stop, "Elastic"

A. G. A. Co., Elizabeth, N. J. [Vol.74,p.776.] 339.

The "Elastic" stop nut differs from a standard nut only in that the height has been increased to accommodate the fiber ring employed to prevent backing off through vibration.



The height corresponds approximately to the height of a standard nut plus the thickness of a lock-washer. The threads are standard with respect to height, form, pitch and fit and are produced in any system. The nut locks on new, worn and undersized bolts. Sizes range from No. 4-48 up to 2½ in.

Oil Control, Constant-Level

Daun-Walter Co., 334 East Water St., Milwaukee, Wis. [Vol.74,p.412.] 131.

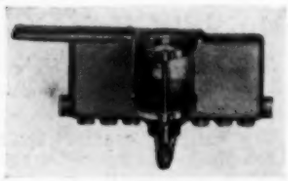
The device consists of a main reservoir with gage to show the height of oil in the reservoir, a supporting bracket, a threaded lower extension for the oil-lead

connection, and a filling cap. Through the influence of gravity and atmospheric pressure, oil is supplied to the bearing when and as it is needed. The oil can be piped to several bearings on the same level.

Oil-Feed Unit, Adjustable-Wick,

Daun-Walter Co., 334 East Water St., Milwaukee, Wis. [Vol.74,p.487.] 202.

This unit is available with a reserve supply of ½ pint to 2 gal. It consists of two elements,



the constant-level oil control and the adjustable-wick, oil-feed multiple unit or wick box. The wick box is of cast aluminum with a removable cover and is made to have 4, 8 or 12 outlets. Provision is made for adjusting the height of the turn-down of each wick loop.

Packing Material, "Plasket"

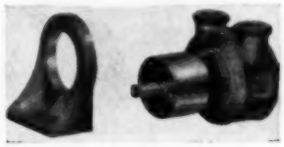
A. & E. Co., 540 North Michigan Ave., Chicago, Ill. [Vol.74,p.373.] 152.

Three grades of a plastic, non-drying packing material, known as "Plasket," are being marketed. Plasket No. 1 is for packing pipe joints, flanged or threaded, for saturated and superheated steam, hot and cold water, air, gas, brine, and liquid ammonia. Grade No. 2 is for sealing joints where gasoline, oil, tar, paraffin and ammonia gas are present, while grade No. 3 is for general-purpose use.

Pumps, Oil, Model CP

Tuthill Pump Co., Chicago, Ill. [Vol.74,p.191.] 39.

For hydraulic applications, but also suitable for handling lubricating liquids, these pumps are of the rotary, internal-gear, positive-delivery type, with an

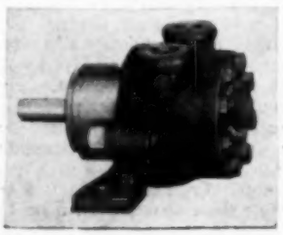


improved stuffing box and incorporating ball bearings. They handle pressures up to 200 lb. per sq.in. Four sizes range in capacity from 2 g.p.m. at 300 r.p.m. to 40 g.p.m. at 1,200 r.p.m.

Pump, Hydraulic, Model L

Tuthill Pump Co., Chicago, Ill. [Vol.74,p.190.] 40.

This gear-type, positive-delivery pump featuring a mechanical seal is available in six



sizes, ranging in capacity from 3 to 180 g.p.h. Pressures up to 200 lb. per sq.in. can be developed in the larger pumps. These pumps have a high suction lift.

Pump, Hydraulic

Vickers, Inc., 7752 Dubois St., Detroit, Mich. [Vol.74,p. 342.] 68.

High volumetric efficiency, continuous working pressure at 500 lb. per sq.in., or to 1,000 lb. per sq.in. for press work, high mechanical efficiency, and quiet operation are features of the

V-type rotary pump. Capacities of the two sizes are 15 and 30 gal. per min. at 1,000 r.p.m.

Rotor and ring are of Nitralloy steel, hardened and ground, and the port flange and bearing flange are of hydraulic bronze. The harmonic curve in the ring at the ports, which joins the concentric curve at the ends, gives a balanced pressure.

Pump, Geared, Rotary, No. 55

Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.74,p.447.[169.

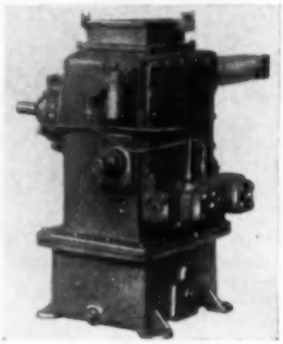
Ball bearings and spiral gears are employed in the No. 55 rotary geared pump, which replaces the No. 5. Improve-

ments make it particularly applicable for supplying oil under pressure for hydraulic operation of machines. The cap, stand and housing are reinforced. Delivery is approximately 36 gal. per min. at 100 lb. pressure.

Pumps, Constant-Pressure, Type WES

Oilgear Co., 647-683 Park St., Milwaukee, Wis.[Vol.74,p.526.]

The Type WES-5 pump has a maximum displacement of 3,600 cu.in. of oil per min. at 860 r.p.m.; the Type WES-6, 3,400 cu.in. at 600 r.p.m. Continuous pressures up to 1,000 lb. can be obtained. A peak pressure of 1,500 lb. is available for short intermittent operation. The special Type WES-6 pump has a maximum displacement of



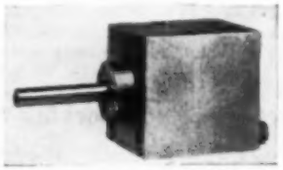
4,800 cu.in. per min. at 860 r.p.m. Maximum pressure is 1,000 lb. per sq.in.

The pumps are equipped with automatic constant-pressure type controls. A peak-pressure relief valve protects against overloads. An oil reservoir is flanged to the pump casing. A gear pump supercharges the high-pressure unit at all times. A 7½ or 10-hp. motor furnishes drive.

Pumps, Nitralloy-Steel

Northern Pump Co., Minneapolis, Minn. [Vol.74,p.560.]

For service in pumping lubricating oils up to pressures of 1,000 lb. per sq.in. and fuel oils at lower pressures, this line of pumps employs Nitralloy steel



for all working parts to obtain acid and wear resistance. The pump body itself is made of solid steel to prevent distortion from pipe strain. It can be drilled and tapped to permit mounting the pump in any position. Capacities range from 0.55 gal. per min. at 1,800 r.p.m. and 25 lb. per sq.in. and up.

Pump, Grinder

Ruthman Machinery Co, Cincinnati, Ohio. [Vol.74,p.697.]

The rotor shaft is supported by two heavy-duty ball bearings and extends into the pump housing to carry the impeller, which is designed to prevent clogging. An intake strainer prevents entrance of grit. The upper end bell is totally inclosed, thereby preventing dirt and drippings from getting into the motor. The pump can be furnished both

for immersed and outside installations and in sizes requiring from ¼ to 5 hp.

Pump, Geared, No. 4

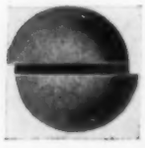
Brown & Sharpe Manufacturing Co., Providence, R. I. [Vol.74,p.884.] 366.

This No. 4 pump has a capacity of 15 gal. per min. at 500 r.p.m. and has a corresponding increase in discharge of 3 gal. per min. for each 100 r.p.m. increase up to a maximum of 30

gal. per min. at 1,000 r.p.m. Suction and discharge ports are of 1¼-in. pipe size for adequate flow. The pump is particularly adaptable as a coolant pump for machine tools, and may be furnished electrically driven.

Setscrew, Self-Locking

Shakeproof Lock Washer Co., Division of Illinois Tool Works, 2501 N. Keeler Ave., Chicago, Ill. [Vol.74,p.344.] 73.



Offsetting the slotted end of the screw so that when inserted the sharp edges bite into the work and exert resistance to any backward movement is the principle employed in this self-locking setscrew. Locking power can be varied to suit individual requirements.

Tubing, Lined, Seamless

Detroit Seamless Steel Tubes Co., Detroit, Mich. [Vol.74,p. 594.] 225.

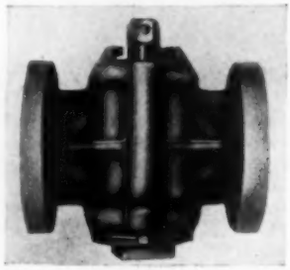
Steel tubing lined with various metals or alloys can be supplied in sizes from ½ to 12 in. O. D. Such tubes can be made in lengths up to 16 ft. for cut-

ting up into steel-backed bearings. Any specified thickness of bearing metal can be obtained.

Valves, Milliken

American Car & Foundry Co., Valve Division, 30 Church St., New York, N. Y. [Vol. 74,p.450.] 136.

The valve has a solid head and employs no packing or gaskets. It has the same face-to-face dimensions as standard flanged gate valves and opens

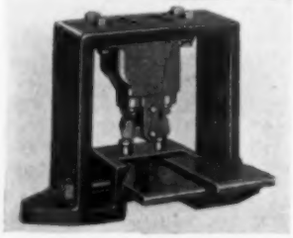


and closes with a quarter turn. The plug is the only moving part, and it is completely lubricated. The valve can be furnished in sizes from 1 to 8 in. and for pressures of 125, 175 and 250 lb. per sq.in. in both threaded and flanged types. Special valves are also made.

Valves, Pneumatic-Control

Ross Operating Valve Co., 6488 Epworth Blvd., Detroit, Mich. [Vol.74,p.926.] 335.

Foot- and hand-controlled operating valves for pneumatic control of mechanisms have been developed. The foot-operated valve is made in two styles, Models D.T. and S.T.



The Model D.T. is made in ⅜, ½- and ¾-in pipe sizes and is mounted in brackets. The Model S.T. is made in ⅜, ½, ¾, 1 and 1¼ in. sizes for double-acting service. The hand-operated valve is made in ⅜, ½, ¾, 1 and 1¼ in. sizes for single- and double-acting cylinders.

Valve Relief, Hydraulic

Vickers, Inc., 7742 Dubois St., Detroit, Mich. [Vol.74,p. 997.] 415.

The valve is operated by a piston that is in hydraulic balance regardless of the initial oil pressure and the pressure for which the valve is set. Consequently, it is sensitive and ac-

curate throughout the pressure range. A hydrocone-shaped valve prevents wire drawing and eliminates oil foaming.

The valve is made for ¾- and 1¼-in pipe connections, and the capacities are 0 to 15 gal. per min. and 10 to 40 gal. per min. The pressure range is up to 2,000 lb. per sq.in.

Belt, Fabric, "Speedage"

L. H. Gilmer Co., Tacony, Philadelphia, Pa. [Vol.74,p.445.]

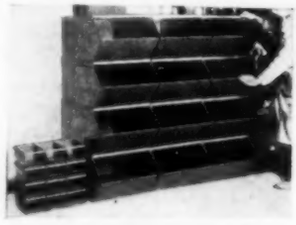
This type of endless woven fabric belt is designed for high-speed, small pulley work and is furnished in light, medium and heavy weights in different numbers of ply. There is no high point in the belt to produce vibration. Light and medium styles are made in widths from ⅜ to 10 in, and the heavy style in widths from ½ to 10 in.

Miscellaneous Equipment, Processes and Supplies

Bins, Sectional, "Stackbin"

Stackbin Corporation, Pearl and Rice Sts., Providence, R. I. [Vol.74,p.631.] 115a.

The above concern has taken over the entire line of nesting bins from the Simplex Tool Company, Woonsocket, R. I. These products were described



previously on page 379, Vol. 74.

The nesting bins are made in four sizes. The first is 4 in. high, 5½ in. wide, and 12 in. long. The last is 9½ in. high, 12 in. wide, and 20 in. long. The bin sections are also made in four sizes. The largest size measures 37 in. wide, 20 in. deep and 9½ in. high.

Blueprint Dryer, "Junior"

C. F. Pease Co., 813-821 North Franklin St., Chicago, Ill. [Vol.74,p.73.] 3.

This inexpensive sheet dryer has capacity for prints up to 24 in. wide. After drying, the prints are automatically returned to an adjustable tray at the front of the machine. The revolving copper drying drum can be furnished with either gas or electric heating elements. Speeds are 2 or 3 ft. per minute. Over-all height is 5 ft. 3 in.; floor space, 3 ft. 5 in. by 3 ft. 6 in.

Bright-Dip Process, Electrolytic

Hanson-Van Winkle-Munning Co., Matawan, N. J. [Vol. 74,p.378.] 151.

With the Hanson-Munning electrolytic bright-dip process, the surfaces, depressions or interiors of steel parts are made chemically clean in a few minutes, and of a bright silvery appearance. Beginning with a short dip in an alkaline solution to remove oil, parts move through a cathodic and an anodic bath, rinses and acid neutralizer. Consequently, the process adapts itself to conveyor installation. Advantages are absence of fumes, steaming baths and non-segregation of equipment.

Core Binder, Durez 476

General Plastics, Inc., North Tonawanda, N. Y. [Vol.74,p. 335.] 125.

Chemical reaction forms the bond when Durez 476 sand core binder is employed, and water

only is driven off. This material is a phenolic condensation product and used in the same proportions as any core oil. This binder saves from one-third to one-half the usual bak-ink time at oven temperatures from 425 to 500 deg. F. The baked core does not absorb moisture readily, and it will take all of the usual core washes, and may be green topped. Knockout is readily accomplished.

Dressing, Rubber-Belt, "Griptite"

The Diamond Rubber Co., Inc., Akron, Ohio. [Vol.74,p. 925.] 390.

This "Griptite" dressing is standardized in one size. Its purpose is not to lubricate the belt but to make the surface more tacky. The belt dressing contains no oil or grease, and no chemicals harmful to the belt or pulley. It is not inflammable.

Floodlight, 100-Watt, "Nolalux"

General Electric Co., Schenectady, N. Y. [Vol.74,p.415.]

The projector, weighing less than 3 lb. and measuring less than 9 in. wide, 10 in. deep and 13 in. high with supporting

stand, is built for a 100-watt, inside-frosted, general service incandescent lamp. The unit is composed of a sheet-aluminum combination casing and reflector. Vertical and horizontal adjustments are obtained with wing nuts in the swivel support and base.

Heater, Warm-Air, Gas-Fired, Forced-Circulation, Type V

Reznor Manufacturing Co., Mercer, Pa. [Vol.74,p.775.] 296.

This heater may be used singly or in multiple for automatic heating of factory interiors. It consists esentially of two, four, six or eight combustion and heat transfer units in which the gas is burned. Sheet-steel panels form the casing. Standard squirrel-cage fans are carried on a shaft mounted in ball bearings. A fan and discharge hood are provided for each pair of combustion units. Automatic control devices are fitted. Four sizes deliver 100,000 to 400,000 B.t.u.

Paint, Protective from Ultra-Violet Light

General Electric Co., Merchandise Dept., Bridgeport, Conn. [Vol.74,p.883.] 374.

This gray, oil-type paint absorbs the invisible rays of ultra-violet light, which are produced in arc welding. Petroleum spirits are used for thinning the paint, which dries in approximately 2 hours. The product has been designated as G.E. No. 881 UVR protective paint.

Painting Unit, Air, Portable, Type F612,

Paasche Airbrush Co., 1909-27 Diversey Parkway, Chicago, Ill. [Vol.74,p.809.] 288.

This Type F612 unit uses a ½-hp. motor, which can be plugged into a 110- or 220-volt circuit. The base of the equipment is mounted on rubber-tired rollers.

The compressor unit is equipped with a copper cooling coil with a water and oil separator to provide clean, dry air. The equipment includes the air compressor and motor, a safety valve, gage and fittings, and 15 ft. of electric cord.

Painting Outfit, Spray, Gas-Engine Driven

DeVilbiss Co., Toledo, Ohio. [Vol.74,p.1003.] 400.

This outfit consists of one spray gun with adjustable spray

head and wrench, 20-ft. of ⅜-in. air hose and connections, 12-ft. of ¼-in. braid-covered hose and connections, 12-ft. of ⅛-in. fluid hose and connections, a 2-gal. paint tank, and a ½-hp. gas-engine-driven compressing equipment mounted on a hand truck.

Paint, Tanks, Pressure-Feed, Clamp-Tight

Paasche Airbrush Co., 1909-27 Diversey Parkway, Chicago, Ill. [Vol.74,p.774.] 287.

This pressure-feed tank for use with paint spray guns is air-tight at a pressure of 100 lb. per sq.in. The cover can be put

on or removed in 15 sec. by turning the eccentric. The tank is made from pressed steel and is lead-coated to prevent corrosion. It is available in capacities from 3 to 60 gal.

Production Estimator, Circular

C. P. Kramer, 4554 West Congress St., Chicago, Ill. [Vol. 74,p.772.] 301.

A production calculator has been announced for figuring drilling, turning, forming and cutting-off operations carried out on turret lathes and single- or multiple-spindle automatic screw machines and chucking machines. This instrument is of pocket size, circular in shape, and is made of stiff sheet brass with etched figures and divi-

sions. Scales are provided for spindle speeds, feeds, depths or lengths of cut, elapsed time and production of pieces per hour.

Recorder, Machine-Time, "Vibracorder," "Ohmer-Kienzle"

Ohmer Fare Register Co., Dayton, Ohio. [Vol.74,p.449.]

For recording the time that any piece of machinery is in operation, the Ohmer-Kienzle 7-day "Vibracorder" employs a 5-in. paper disk and an eight-

day, 6-jewel clock. The mechanism rotates a drum bearing the disk under a steel stylus. The chart is laid out with spaces for minutes, hours and days, and for both day and night operation. A wide line is plotted on the chart by the stylus because of the influence of machine vibrations. A light line is drawn when the machine is at rest.

Solder for Aluminum and White Metals, "Flotite"

Pittsburgh Metals Purifying Corporation, P. O. Box 31, N.S., Pittsburgh, Pa. [Vol.74, p.486.] 192.

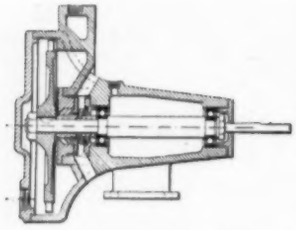
"Flotite" solder can be applied with a soldering iron or an open-flame torch. Its color is identical to that of aluminum and white metals, and its melting point is low. The solder is used without a flux and flows freely.

Steam Turbines, Fractional-Horsepower

Coppus Engineering Corporation, Worcester, Mass. [Vol. 74,p.300.] 106.

Designed primarily for unit-heater drives, a fractional-horsepower steam turbine has been developed. It is said to be lower in initial cost than an electric motor drive and eliminates electric current costs and accessories.

In the case of unit heaters, high-pressure steam is supplied and the exhaust steam is used in the heater. Because it is possible to run the fans at higher speeds with a turbine, fewer power units need be employed



than with a motor-driven installation. The steam turbine uses less steam for operation than the unit heater can condense.

Time Meter

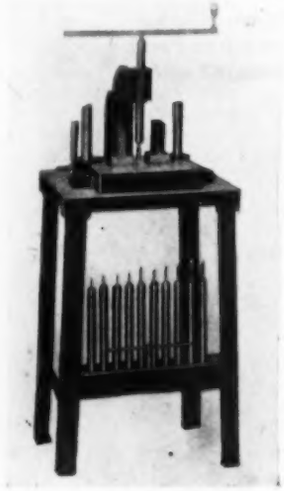
General Electric Co., Schenectady, N. Y. [Vol.74,p.1001.] 412.

The total operating time of any electrical equipment using a.c. current is shown by this time meter. Within the meter is a synchronous motor that, through suitable gearing, drives a cyclometer five-digit counter arranged to read in either hours or minutes. Such a meter is especially valuable in checking piece-rate operation.

Tapping Bench, Hand

Bay State Tool and Machine Co., 412 Albany St., off St. James Ave., Springfield, Mass. [Vol.74,p.189.] 36.

With this hand tapping bench for tool and die rooms, tapped holes are assured at right angles to the work without the aid of a square. It does away with tap extensions, since the spindle itself reaches down between projections in the work. The rack holds spindles with various-sized taps.



Tool Crib Register, Class 800

Ohmer Fare Register Co., Dayton, Ohio. [Vol.74,p.72.] 30.

This Class 800 register keeps a perpetual tool inventory with a minimum of detail work. It mechanically prints and issues two original copies of the tool order showing:

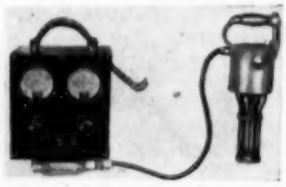
a. The date (month, day and year) tool was issued to workman.
b. Tool number.
c. Employee's check number.
d. Class of tool.
e. Transaction number.
f. Register number.

This information is also printed on the locked-in record of register.

Viscometer, Electric

The DeVilbiss Co., Toledo, Ohio. [Vol.74,p.377.] 140.

The "Viscometer" measures the viscosity of finishing materials by rotating an impeller



in the liquid under standard electrical conditions. The load imposed by the liquid upon the impeller is determined by the effect upon the electrical circuit of the rotor. Calibration charts are furnished for conversion of the DeVilbiss units into other established units, such as Saybolt seconds or Engler degrees. Measurements can be made readily in the original container.

The indicating instruments are housed in a compact, sturdy case to which the impeller is attached by means of a power cable. An attachment plug is furnished.

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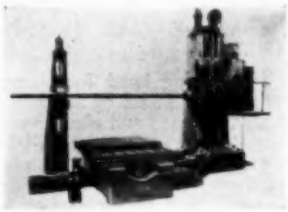
Boring and Turning Machines

Boring Machine, Horizontal, 9-In. Spindle

Hulse & Co., Manchester, England. [Vol.74,p.159E.] 126.

A 15-hp. reversible vertical motor supplies power for the spindle drive. To eliminate the torsional defects of long shafts, the spindle slide casting is divided into compartments providing bearings for, and allowing the use of, short stiff shafts running in ball bearings. The



16 spindle speeds range from 2 to 200 r.p.m., and the eight boring feeds from $\frac{1}{8}$ to $\frac{1}{64}$ in. per rev. The spindle slide has a vertical traverse of 7 ft., and the main upright a longitudinal traverse of 5 ft. 6 in.

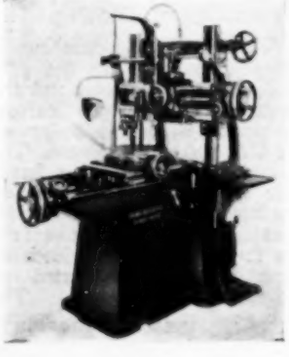
The main table has a working surface of 7 by 16 ft., and a traverse of 9 ft. The top table is 7 ft. square and can be used for multi-station loading. The boring bar stay has a longitudinal traverse of 3 ft.

Boring Machine, Jig

Sidney G. Jones, Ltd., 1-3, Brixton Road, London, S.W., England. [Vol.74,p.148E.] 122.

This is the largest machine manufactured by Henri Hauser S.A., Bienne, Switzerland. Micrometer screws are used for positioning the table and boring head, and corrector bars are fitted. The dials read to 0.0005 in. and verniers are permit readings to 0.00005 in.

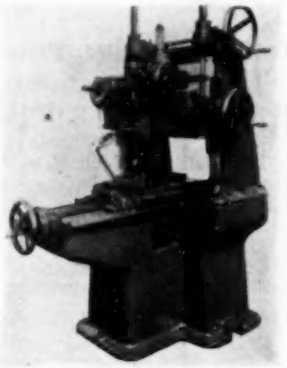
With a single-speed motor, four speeds ranging from 100 to 1,500 r.p.m. can be obtained. Three automatic, reversible boring feeds are provided. The maximum drilling capacity is 1 in., and the maximum boring capacity, 4 in. Longitudinal travel of the table is 20 in.; cross travel of the boring head, 16 in.; maximum distance between the table and nose, 20 in.; and distance between columns, 23 in.



Boring Machine, Jig

Societé Genevoise, Ltd., 95 Queen Victoria St., London, E.C., England. [Vol.74,p.197E.]

This precision boring machine has two uprights equipped with a fixed and a movable crossbeam. Accuracy of the main motions in two rectangular coordinates is insured by high-precision micrometer screws, the travel being 12 by $17\frac{3}{4}$ in. A circular table, $13\frac{3}{4}$ in. diameter

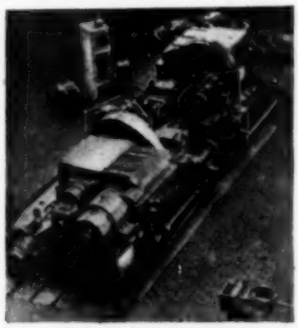


permits precision boring with the help of polar coordinates. Vertical travel of the boring spindle is $4\frac{3}{4}$ in., and it runs at eight speeds. The feed may be either by hand or automatic means.

Boring Machine, Railway-Wheel-Tire, Duplex

Craven Bros. (Manchester) Ltd., South Reddish, Stockport, England. [Vol.73,p.219E.] 4.

This tire-boring machine consists essentially of two machines united by a platform for the operator. It will bore simultaneously two tires from 24 to



38-in. bore. The time per tire is 10 min.

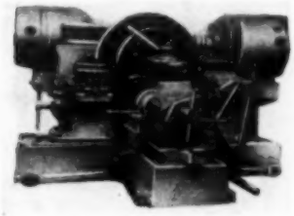
Halves of the machine are independent, each consisting of a driving headstock with faceplate mounted on a bed, a cross bed in front of each faceplate, and cam-operated front and back toolrests. Each headstock is driven by its own 25-hp. motor with push-button control. Spindle speeds range from $\frac{3}{4}$ to 10 r.p.m. The height of center of the flanged spindle is 2 ft. 6 in. Two saddles are arranged on each cross bed, each saddle carying a large main ram or slide in which are arranged the various tool bars and slides.

Floor space, 24 x 12 ft., net weight, without motors, 22 tons.

Boring Lathe, Wheel-Center, Duplex

Hulse & Co., Ltd., Manchester, England. [Vol.74,p.59E.] 79.

This high-production machine is for boring and facing the bosses and turning and recessing the rim at one setting of carriage and wagon wheel centers. The center height is 2 ft. $4\frac{1}{2}$ in., and the lathe weighs about 21 tons. It is of the duplex type, a central headstock carrying two sets of driving gears and two faceplates. Two T-shaped baseplates carry the tool slides. Drive is by two 20-hp. variable-speed motors giving independent



feed and speed control to the unit. Each spindle is 10 in. in diameter. The front tool-rest consists of a lower slide, capable of adjustment along the baseplate to cover the extreme sizes of wheels taken by the machine. To the back and turret rests are fitted adjustable feed stops, and to all the rests adjustable limit stops.

Lathe, Wheel-Turning

Wilhelm Hagenscheidt, A.G., Ratibor, Germany [Vol.74,p. 89E.] 97.

This wheel-turning lathe is intended for wheel sets having roller bearings. The driving and gripping device has four jaws, balancing the pressure, and wheel sets with roller bearings not removed from the journals can be chucked in the same time as normal wheel sets. If

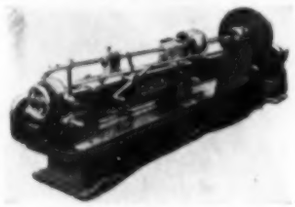
the cutting pressure rises, all jaws are automatically and regularly tightened so that the tires are machined concentrically with the center holes. Finishing is done by vertical form cutters.

Weight of machine, 31,000 kg.; output, 42 wheel sets in eight hours.

Boring Machine, Gun-Barrel Type

J. Holroyd & Co., Ltd., Milnrow, near Rochdale, England. [Vol.73,p.312E.) 37.

This machine is for boring long holes in rotor shafts of electric motors, the work revolving. The hole is bored from one end only, the machine hav-



ing two work headstocks. Shafts up to 28 in. long and from 5 to 16 in. can be admitted, the maximum hole bored being $2\frac{7}{8}$ in. Spindle speeds range from 83 to 250 r.p.m. The boring saddle has automatic feed in 12 rates obtained by a screw, with automatic trip by a drop-worm box.

Boring Mill, Special

G. Swift & Sons, Ltd., Halifax, England. [Vol.74,p.9E.] 45.

This vertical turning mill has ben specially designed for taper-turning of steel blanks ranging from 23 to 36 in. in diameter. The width across the face of the vertical column is 3 ft. and the worktable is 3 ft. in diameter. Swiveling motion is pro-

vided to the cross-slide. The tool-slide has automatic reversible feeds, both horizontally and vertically, the latter travel being 14 in. The tool-slide also has horizontal traverse along the cross-slide of 2 ft. Quick-return motions are provided.

Main drive is through a crowned, flanged friction pulley. The nine table speeds vary from 15 to 74 r.p.m., and the six feeds from 20 to 76 cuts per inch.

Boring Mill, Single-Column

J. Holroyd & Co., Ltd., Milnrow, near Rochdale, England. [Vol.74,p.162E.] 130.

This machine is intended for facing the sides of piston rings for locomotives and for general

turning and boring work. The standard has a cross-slide carrying a toolhead, and an extension of the body carries the circular table. The latter is 2 ft. 6 in. in diameter, and the machine will swing work up to 2 ft. 8 in. in diameter. Drive is by a 3-hp., variable-speed motor, giving six table speeds from 10 to 60 r.p.m. The toolhead bears a round turret, which will carry two tools. The slide has cross adjustment on the cross-rail of 17 in., and the vertical traverse is 12 in. Minimum distance from the table to the tool turret is 4 in., and the maximum, 16 inches.

Turning Machine, Bar

Scriven & Co., Leeds, England. [Vol.74,p.75E.] 90.

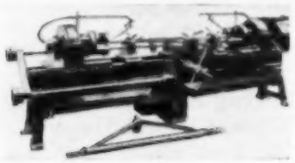
This special machine is for turning mild-steel bars from 3½ to 7 in. and up to 20 ft. long. The box-section bed carries a gear-driven hollow-steel spindle and a roller-feed gearbox. Rails at each end carry the traveling

bar grips. The hollow spindle contains four detachable heads, three being fitted with three cutting tools and three roller bar steadies, while the fourth carries four roller bar steadies only. The bar is gripped by a quick-acting chuck in the first carriage and fed through the revolving hollow spindle. When the turned bar leaves the spindle, it is gripped in the second traveling carriage.

Turning and Facing Machine, Brake-Beam

J. Holroyd & Co., Ltd., Milnrow, near Rochdale, England. [Vol.73,p.326E.] 40.

Intended for turning the shanks and facing the ends and collars of railway-wagon brake beams at both ends simultaneously, this machine secures the brake beams in three fixtures. One is placed centrally at the apex of the triangular extension, and the others at the ends by the rectanguar section immediately behind the shank collars. The tools are carried in revolving boxes on the right- and left-hand headstocks, which have longitudinal movement. Adjustable roller steadyrests are fitted inside the tool boxes. For the

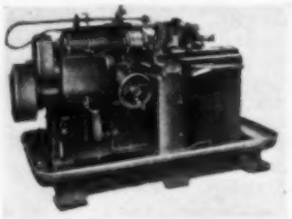


automatic feed of the headstocks along the bed, cone pulleys are provided, operating through a worm reduction gear and rack pinion. The headstocks feed to adjustable dead stops. Maximum length admitted is 5 ft. 9 in. Traverse of each headstock is 9 in. Maximum diameter and length of shank turned are 1½ and 6 in.

Chucking Machine, Automatic, Single-Spindle

B.S.A. Tools, Ltd., Sparkbrook, Birmingham, England. [Vol.74,p.119E.] 112.

Maximum swing is 9½ in., or with the cross-slide forward, 7 in. Working stroke of the capstan is 6¼ in., and the cutting stroke, 4½ in. Maximum and minimum distances from the spindle flange to the capstan face are 22½ and 10¼ in., and



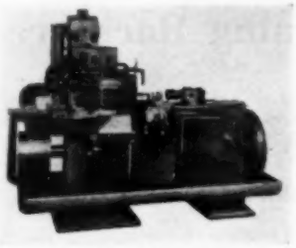
the stroke of the cross-slides is 3¼ in. Drive is by an all-geared headstock, and 10 spindle speeds are obtained by change gears, ranging from 20 to 325 r.p.m. The 12 feeds range from 0.005 to 0.05 in. per rev., with four automatic changes.

The two features are provision of an over-riding dog clutch in the feed mechanism to prevent damage due to jamming, and second, the longitudinal adjustment of the headstock. The spindle is bored 2½ in., and is carried on taper roller bearings, the nose being flanged. An air-operated chuck can be fitted.

Automatic for Automobile Axles

A Butterworth & Co., Rochdale, England. [Vol.74,p.8E.] 44.

On this automatic machine for turning motor-car axles and shafts, the work is held by means of two split collets, one

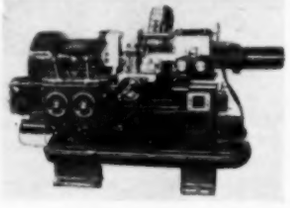


at each end of the headstock and both controlled by the star wheel. Drive is furnished by two constant-speed motors to the spindle and the feed, with independent push-button controls. Chain drive is employed. Cams actuate the top tool and centering tool at the bevel gear end of the work, the other tools being carried in slides mounted in a bracket.

Lathe, Automatic, Piston

Benrath Machine Tools, Manchester, England. [Vol.74,p.185E.] 141.

This lathe is built for the automatic turning of pistons or other work up to 6¾ in. It is supplied with high speeds for machining light metals, with drive by one d.c. variable-speed motor or an a.c. two-speed mo-



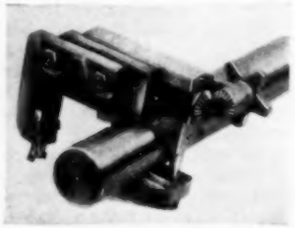
tor, or for slow speeds with geared headstock and single pulley drive. The automatic movements may be driven either by compressed air or hydraulically. Spindle speeds range from 600 to 1,200 r.p.m. An electromagnetic coupling controls the spindle drive.

When the cut is finished the feed levers are disengaged automatically, the lever controlling the longitudinal slide actuating at the same time the valve for the cross-slide, so that the latter is also withdrawn.

Facing Head

Matterson, Ltd., Shawclough, Rochdale, England. [Vol.74,p.118E.] 111.

This facing head for clamping on boring bars of horizontal boring, drilling and similar machine tools will face from 5½ in. down to 1½ in. radius, with an uninterrupted traverse of 3½ in. The feed may be by hand or by



any suitable tappet device operating the star wheel. This drives a pair of bevel gears and thus the feed screw. By using a suitably mounted holder, short boring bars can be used.

Drilling Machines

Drilling Machine, Upright, Adjustable-Center, Four-Spindle

Jones & Shipman, Ltd., Leicester, England. [Vol.74,p.161E.] 128.

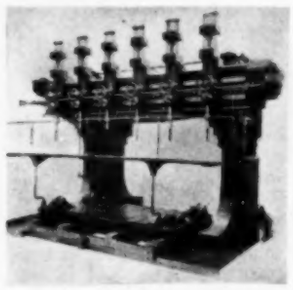
Drive to each spindle is by means of spiral gears. The minimum center distance is 4 in., and the maximum spindle center

distance between the two outside spindles is 36 in. All four spindles may be fed simultaneously or individually, and each may be adjusted vertically to accommodate varying lengths of drills. The table has a working surface of 39 by 24 in., with vertical adjustment of 38 in. Distance between the uprights is 42½ in. The spindles are bored No. 1 Morse taper, and the length of feed is 6 in.

Drilling Machine, Upright, Six-Spindle,

Campbells & Hunter, Ltd., Leeds, England, [Vol.74,p.120E]

This six-spindle machine is adapted for drilling the tube holes in steam drums and the water prockets of the Yarrow or similar water-tube boilers up to 6 ft. and of any length. The six saddles and drilling heads can be moved in each direction by hand or power. Each saddle has a self-acting positive feed in four rates and a clutch so that it may be started or stopped independently. The cross-rail is raised and lowered

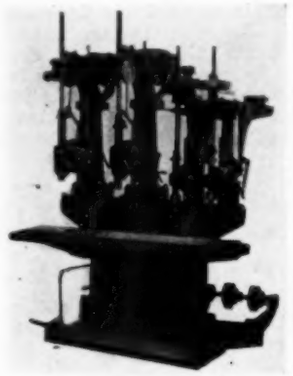


by power. Maximum height admitted is 8 ft. 4 in., and the center-to-center distance between the two end spindles is 18 ft.

Drilling Machine, Gang, Four-Spindle

Jones & Shipman, Ltd., Leicester, England. [Vol.74,p. 184E.] 139.

The column carries at the left two 20-in. heads placed at 19-in. centers and at the right two 14-in. heads at 10-in. centers. A motor at the rear drives by chain to the bottom shaft through a chain clutch. Control is by the pedal at the front. The



two left-hand heads are all-geared, having eight spindle speeds and three geared automatic feeds in addition to hand feed. The spindles are bored No. 4 Morse, the feed being 10½ in.

The two right-hand heads are fitted with ball bearings for high speeds, which are six in number. Maximum distance from spindle to table is 29½ in., and from the spindle centers to the column face, 7⅜ in.

Drilling Machine, Multiple-Spindle

F. Town & Sons, Halifax, England. [Vol.74,p.230E.] 157.

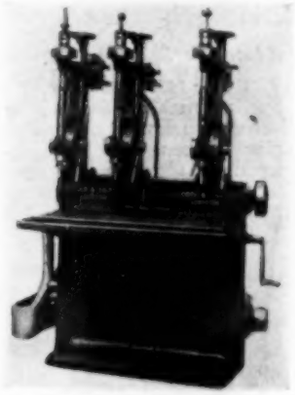
This machine is of the sliding-head type and is arranged for gearbox drive. It drills 1¼-in. holes in cast iron, and 1 in. in mild steel. Working surface of the baseplate is 2 ft. 10 in. by 2 ft. 6 in. Vertical traverse of the drilling head is 24 in. The twelve spindles can be set to a maximum circle diameter of 18 in., or four spindles can be set to a minimum diameter

of 3¾ in. Spindle speeds range from 420 to 165 r.p.m. Each spindle has a vertical adjustment of 1 in. to allow for varying lengths of drills.

Drilling Machine, Sensitive, Three-Spindle, Adjustable-Center

Adcock & Shipley, Leicester, England. [Vol.73,p.283E.] 22.

This drilling machine carries three of the firm's standard ball-bearing 15-in. drillheads with plain spindles and is equipped with hand and automatic feeds. The heads stand on a column, which is extended in width or length, and is T-slotted lengthwise so that the heads may be bolted in any desired position.

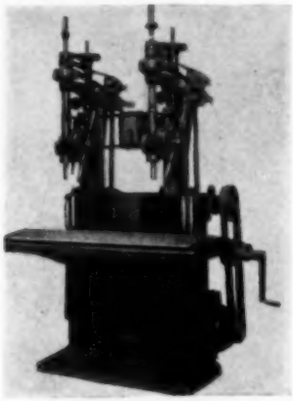


Distance from the center of the spindles to the column is 7½ in. By using various standard columns and tables, any required maximum spindle centers can be obtained, the minimum centers being 9½ in.

Drilling Machine, Sensitive, Two-Spindle, for Cylinder Blocks

Adcock & Shipley, Leicester, England. [Vol.73,p.250E.] 16.

This two-spindle unit is employed for drilling location holes in cylinder blocks. It is an adaptation of the firm's 15-in. ball-bearing drill and has two standard heads with plain spindles and automatic feeds. The spindles are set at 23⅜-in. centers. Drive is by motor at the back, giving six speeds to

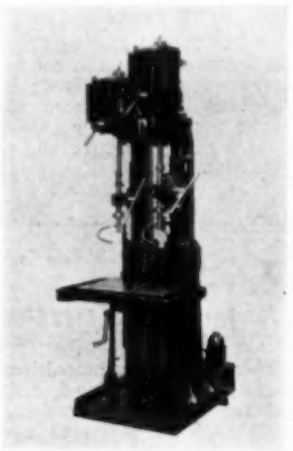


the spindle. Three automatic feeds are provided. The table working surface is 53 by 18½ in.

Drilling Machines, Sensitive, Motor-Driven

J. Archdale & Co., Ltd., Birmingham, England. [Vol.74,p. 104E.] 104.

On these sensitive drilling machines the motors are mounted direct on the spindles, and changes of speed are ob-



tained electrically with the plain heads and by a combination of electrical and mechanical means for the geared heads. Machines with any number of spindles up to six can be had. Holes up to ¾ in. can be drilled in mild steel.

Spindle movement is 5 in., and distance from center of spindle to column is 7½ in. Maximum distance from the table to the end of the plain spindle is 33 in., and to the geared spindle 30 in. Vertical adjustment of the spindle holder is 8 in., and of the table 19 in.

Drilling Machine, Radial, Girder, 6-Ft.

D. Mitchell & Co., Ltd., Keighley, England. [Vol.74,p. 170E.] 134.

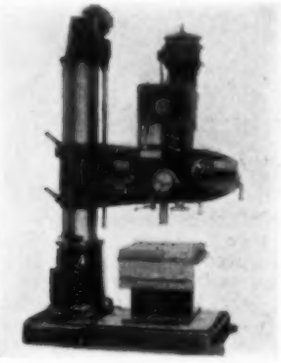
This 6-ft. direct motor-driven girder radial has push-button control on the saddle. The box-section arm and saddle are mounted on ball and roller bearings. Minimum radius of the drill spindle is 18 in. The spindle is bored No. 4 Morse and is balanced by a compensating spring. Speeds are 300 and 200 r.p.m., and the feeds are

49, 88, and 140 cuts per in. Maximum fed of the spindle is 12 in. Maximum distance from the floor to the spindle nose is 4 ft. 3 in., and holes up to 1⅛ in. can be drilled at the rate of 6 in. per min.

Drilling Machine, Radial, All-Electric

Soag Machine Tools, Ltd. Horseferry Road, London, S. W., England. [Vol.74,p.196E.]

Hermann Kolb, Koln-Ehrenfeld, Germany, manufactures this small radial drilling machine with a spindle radius of 3 ft. 7½ in., the maximum distance from the edge of the column to the center of the spindle



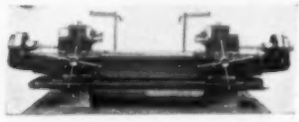
being 2 ft. 7½ in. Holes up to 1⅞ in. can be drilled. The twelve geometrically-arranged speeds range from 60 to 2,670 r.p.m., and the four feeds from 0.0039 to 0.0315 in. The drilling spindle is driven direct by motor. For tapping, a shockless spindle reverse at high speed is provided for by means of a laminated coupling.

Drilling Machine, Horizontal, Three-Spindle, Duplex

Smallpeice, Ltd., Coventry, England. [Vol.73,p.220E.] 5.

The bed is 12 ft. long and supports two, three-spindle drill heads, each independently driven

by a cone pulley. Drive for each head is by a central gear with three pinions for the three spindles. Each spindle is bored No. 4 Morse taper. The spindles are driven through universal joints, and are thus adjustable as to center distances. Each



head is adjustable along the bed 26 in. by rack and star wheel. Ten power feeds with trip mechanism are provided.

The machine is intended for such work as drilling holes in crankpins, crankshafts and camshaft bearings in crankcases, and gearcases.

Drilling Machines, Standard-Unit

Frederick Pollard & Co., Ltd., Leicester, England. [Vol. 73,p.310E.] 35.

Drilling machines employing standard unit heads have been developed. The main drill spindles, feed mechanism, etc., are identical through the range of machines.

Each main head is driven by a separate motor, has independent automatic feed and stop and

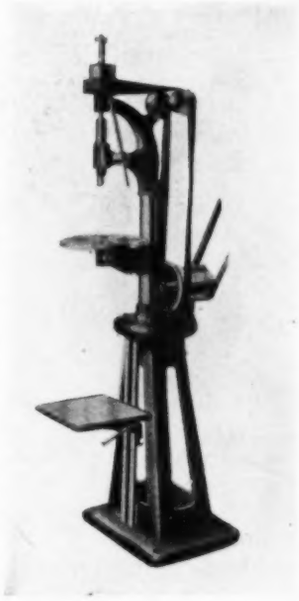
is entirely self-contained. It can be fixed in any position. The feed to the spindle is by cam, and screw adjustment is provided to regulate the height and allow for varying lengths of drills. Electric controls are featured.

Four standard drill units are available to drill from ⅜ to 2 in. All spindles can be arranged to carry multiple drillheads, and reverse motion for tapping can be provided.

Keyseating and Pillar Drilling Machine

Thomas Bradley, Church, Accrington, England. [Vol.74,p. 26E.] 55.

This combined drilling and keyseating machine will drill holes up to ½ in. and keyseat up to 3 in. by 8 in. by 2½ in. deep for keyways of the sunk, spline or Woodruff types. The machine may also be employed for end-milling and slot-milling. The

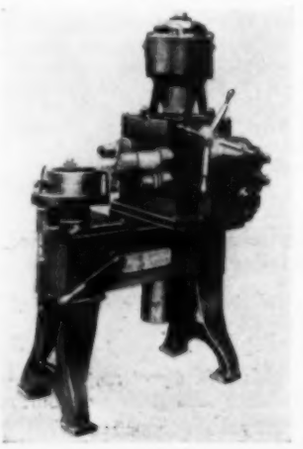


lower sliding table has a working surface of 12 by 11 in., and the top table a working surface 12 in. in diameter, and it may be canted through 90 deg. The feed attachment has a capacity up to 2½ in., and the compound rest a working surface of 12½ x 6 in. and a movement of 3 in. by 8 in. It can also be tilted. The distance from the column to the spindle center is 6½ in. Maximum distance from the spindle nose to the top table is 12 in. or to the lower sliding table 3 ft. 9 in.

Drilling and Tapping Machine, Four-Spindle, Single-Purpose

Kitchen & Wade, Ltd., Halifax, England. [Vol.74,p.58E.]

This special, motor-driven, single-purpose machine drills and taps two holes simultaneously at fixed angles to each other. Two spindles are used for drilling and two for tapping. A 3-hp. vertical motor is placed on the drilling head, and the work-holding fixture is placed at the right. The spindles have hand feed only, and the work-holding fixture is of the quick-clamping type.



Drilling Machines, Special-Purpose

Adcock & Shipley, Leicester, England. [Vol.74,p.149E.] 124.

Three automatic drilling machines for producing jet holes in gas-stove burners, both straight and circular, have been designed. The illustration shows the machine for circular burners, this type drilling the holes in the outer ring. A circular worktable is used, in-

clined to suit the angle of the holes and having an adjustable knock-out stop with plunger. The work is indexed by a plate and plunger. The feed cam provides up and down motion for the drill spindle, and is connected to the driving mechanism so as to work synchronously.

Drilling Machine, Automobile-Piston

Adcock & Shipley, Leicester, England. [Vol.74,p.209E.] 150.

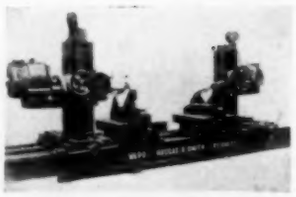
Special machines for drilling oil-groove holes in automobile engine pistons has been developed by the above concern. The machine for drilling Humber pistons is illustrated, and

here 16 holes are drilled at irregular spaces. The drilling spindles are horizontal and the pistons are held in pots which form the drill guides. Drive is through a cam and lift plates.

Drilling Machine, Duplex, for Pipe Flanges

Ward, Haggas & Smith, Keighley, England. [Vol.74,p. 91E.] 100.

This machine will deal with pipes up to 30 in. in diameter. The box-section bed is 22 ft. long. It carries two adjustable sad-

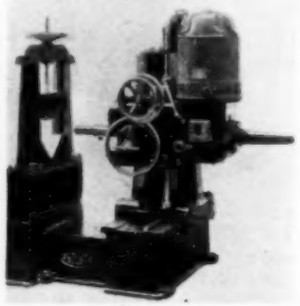


dles which support the vertical columns and drilling heads. Each drilling head has a transverse adjustment and is made either right- or left-hand. Each head is driven by a 7-hp., variable-speed motor, and the spindle speeds range from 200 to 500 r.p.m. The three geared feeds range from 60 to 120 cuts per in. Traverse of the spindle is 12 in. The maximum length of work admitted between the drilling spindles is 12 ft., and the maximum height of the spindle over the top of table is 3 ft. 7 in. Bolt holes may be drilled in pipe flanges up to a pitch-circle diameter of 3 ft.

Drilling Machine, Pipe-Flange

W. Asquith, Ltd., Halifax, England. [Vol.74,p.210E.] 151.

This motor-driven horizontal pipe-flange drilling machine has a bed 3 ft. 10 in. by 3 ft. 8 in. by 16 in. deep. The column has guide ways, on which the balanced drill-slide is adjusted vertically 15 in. by hand. The col-



umn slides 15 in. on the bed. Horizontal traverse of the spindle is 16 in. Spindle speeds from 380 to 760 r.p.m. are available through the 3-hp., variable-speed motor. The spindle is bored No. 4 Morse taper. Clamping is by vertical screw and handwheel, enabling pipes from 3 to 12 in. to be accommodated.

Drill, Gas-Engine-Driven

Howard Pneumatic Engineering Co., Ltd., 25, Victoria St., London, S.W. [Vol.74,p.57E.] 76.

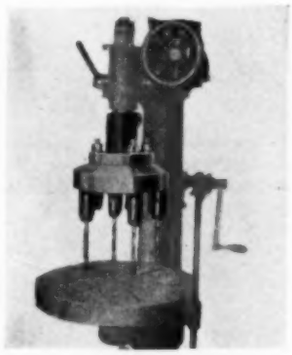
This portable gas-engine driven drill weighs 38 lb., and has an over-all length of 11½ in. Full equipment includes a fuel tank and a box containing the ignition coils and battery. The engine is an integral part of the design and develops sufficient power for drilling a 1¼-in. hole through a 1¼-in. mild steel plate

in one minute. The drill is built in three sizes: $\frac{3}{8}$ to 1 in.; $\frac{7}{8}$ to $1\frac{1}{4}$ in., and $1\frac{1}{4}$ in. to $1\frac{1}{2}$ in.

Drilling Head, Multi-Spindle

J. Ackworthic, Ltd., Coleshill St., Birmingham, England. [Vol. 74,p.151E.] 125.

This multiple-spindle drilling head is clamped to the quill of the drilling machine in the usual way. Any number of drilling spindles may be used. With

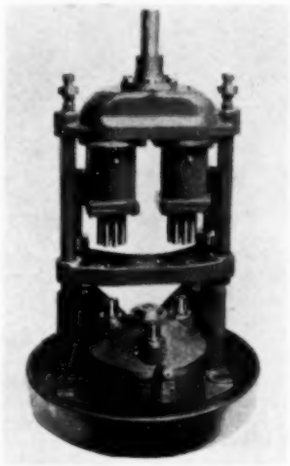


No. 1 Morse taper holes, the spindles will drill up to $\frac{7}{16}$ in. and with No. 2 Morse taper up to $\frac{7}{8}$ in. The pitch circle of the holes may be from $2\frac{3}{4}$ in. to $9\frac{1}{2}$ in., or from 3 to 12 in. in the larger size. Minimum center distance is $1\frac{1}{2}$ in. A central gear drives the spindles through intermediate gears, one to each spindle.

Drilling Fixture, Gear, Multi-Head

Adcock & Shipley, Leicester, England. [Vol.74,p.184E.] N.T.

This multi-head fixture is for drilling sixteen holes in the second and third sliding gears used



in Ford cars. The head is built in two clusters each of eight spindles. The base carries a three-station fixture underneath the guide plate, one station being always in the loading position. The table is indexed by hand.

Gear Cutting Machines

Gear Planer, 15-Ft. Sunderland

J. Parkinson & Son, Shipley, England. [Vol.74,p.168.E.] 132.

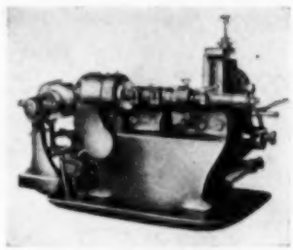
For generating spur and helical gears on the Sunderland system, this gear planer will cut spur gears up to 15 ft. by 24 in face, 5 C.P., and double-helical gears up to 15 ft. by 24 in. face, 1 D.P., and single-helical or spiral gears, either right- or left-hand, 15 ft. by 10 in. face at 30 deg. helix angle to 15 in. face at 0 deg. helix angle. The various types of gears are cut by means of three different sets of cutter slides that are interchangeable on the machine.

The bed is made in three portions bolted and keyed together. The largest section supports the headstock which carries the cutter slides, and the two other sections are pedestals with a gap between them, in which the wheel to be cut is mounted on a spindle.

Hobbing Machine, Gear, Small

Selson Engineering Co., Ltd., Charles St., E.C., London, England. [Vol.73,p.325E.] 38.

This Morat gear hobbing machine is suitable for gears up to 3 in. in diameter by $1\frac{3}{4}$ in. length of cut by 24 D.P. The hob is mounted horizontally between the headstock and tailstock, the hob operating below and feeding in line with the gear axis. The cutter spindle

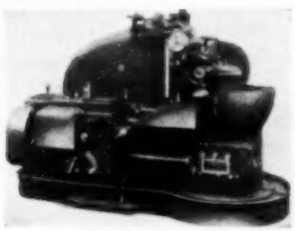


has vertical adjustment on the cutter slide. For cutting thin wheels in batches, an arbor is designed for quick insertion and withdrawal. Drive is by self-contained fast-and-loose pulleys mounted on a cross shaft at the headstock end. On the cross shaft is also carried a two-step cone pulley belted to a second cross shaft at the tailstock end. This design provides two speed changes.

Hobbing Machine, Wormwheel, High-Production, "Pfauter"

Dowding & Dickinson, Greycoat St., Westminster, S.W., England. [Vol.74,p.54E.] 72.

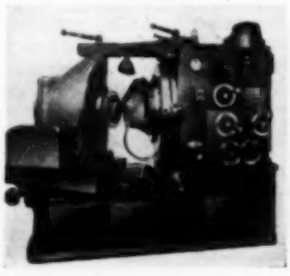
See American section, page 91, for details of this machine.



Hobbing Machine, Spiral-Bevel

W. Ferd. Klingelnberg Sochne, Remscheid, Germany. [Vol.74, p.123E.] 118.

For the Palloid spiral-bevel system, the longitudinal tooth curves are so crowned that they are more sharply curved on their convex than on their concave sides. Thus, the tooth has a slightly varying thickness, being largest in the center. The special cutter is so set on the hobbing machine that its axis is tangent to the gear circle. The teeth at the large-diameter end perform the roughing work, while the teeth near the small-diameter end finish the flanks.



The hob, together with its cutter head, swings about the cone vertex of the gear blank. Lengthwise adjustment of the cutter headstock is provided, while the work headstock, which is connected with the cutter headstock by an overhead tie beam, may be adjusted in all three directions and angularly to 360 deg.

Hobbing Machine, Spline-Shaft

Dowding & Dickinson, Greycoat St., Westminster, S.W., England. [Vol.74,p.171E.] 135.

This hobbing machine is suitable for spur and spiral gearing and particularly for hobbing long, heavy splined shafts. The maximum outside diameter hobbed is 8 in., and the maximum length 5 ft. In the standard machine the maximum pitch

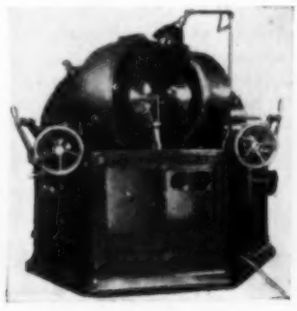
hobbed is 3 D.P., the number of teeth hobbed from 4 to 80, and the minimum and maximum center distances between the hob and work arbor are $2\frac{5}{16}$ and $6\frac{3}{4}$ in. The work rotates in a horizontal plane and the cutter head travels along it. A heavy flywheel on the cutter drive shaft insures steady running. Adjustment for depth of cut is made by hand through a spindle and dial. The hobbing head and spindle are arranged to swivel.

A $7\frac{1}{2}$-hp. motor is required, and the weight of the machine is 5 tons.

Lapping Machine, Gear, Bevel and Helical

W. Ferd. Klingelnberg Soehne, Reimscheid, Germany. [Vol. 74,p.88E.] 96.

A swinging lapping method is employed in this machine, and the lapping action represents the resultant movement of the rolling action of the meshing gears combined with three swinging motions, which are adjusted independently as to amplitudes and velocities. The swinging movements comprise straight-

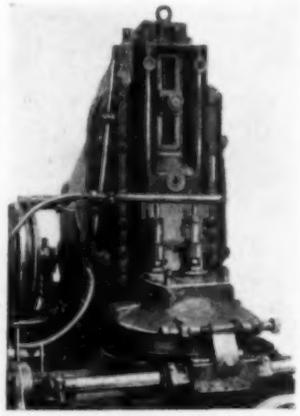


line reciprocations of the two gear headstocks at right angles to each other, and, in addition, one of the gears is caused to perform a "wabbling" motion about the center of its nearest bearing. By these movements, the axes of the meshing gears are caused to intersect alternately while the tooth flanks do not always contact along their entire length of tooth. Thus, the gear teeth are slightly crowned, both longitudinally and radially.

Gear-Cutting Attachment, Duplex

Sulzer Bros., 31 Bedford Square, London, W.C., England. [Vol.73,p.239E.] 13.

This duplex gear-cutting attachment is offered for the standard Maag gear planer for dealing with gears up to 4 in. outside diameter, output being approximately doubled. The taper hole in the table is utilized



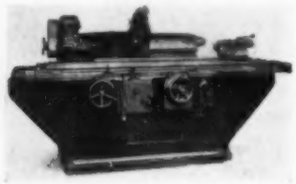
for locating the main driving spindle of the attachment. The latter consists of a body which fits on the work carriage. It carries two work arbors which engage the rack cutter simultaneously, adjustment being provided to insure an equal depth of cut for the gears.

Grinding Machines

Grinder, Cylindrical and Plunge-Cut

Sidney G. Jones, Ltd., Brixton Road, London, S.W., England. [Vol.74,p.195E.] 146.

Fortuna - Werke, Stuttgart-Cannstatt, Germany, manufactures this cylindrical and plunge-cut grinder, which can also be arranged for universal grinding with an internal attachment. The maximum grinding diameter is 9¾ in., the height of centers being 5¼ in. The



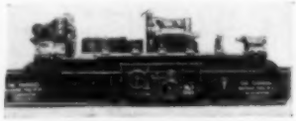
machines are available in 20½, 31½ and 47½ in. grinding lengths. The table movement, feed and all controls are effected hydraulically.

Feed may be applied at both ends of the table movement or at either end at will, and the amount of feed at the right- or left-hand traverse may be varied independently.

Grinder, Cylindrical, for Automobile Engine Work

Churchill Machine Tool Co., Ltd., Broadheath, Manchester, England. [Vol.74,p.105E.] 105.

This heavy plain grinder swings 36 in. over the table and 42 in. in the gap. Maximum length admitted between centers is 144 in. Attachments for camshafts and crankshafts of internal-combustion engines can be fitted. The table is of the deep - section, non - swiveling type, provision being made for grinding small tapers by the use of a set-over tailstock. The



workhead has all fast-running shafts placed at right angles to the grinding center line, so that out-of-balance effects are not transmitted to the work. Controls are interlocked. Drive to the head is by a 5-hp., constant-speed motor. The table has ten rates of power traverse and the automatic feed is variable from 0.00025 to 0.003 in. per traverse.

Grinder, Roll, 20-In.

J. Holroyd & Co., Ltd., Milnrow, near Rochdale, England. [Vol.74,p.75E.] 89.

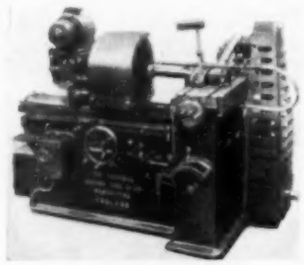
Either parallel or cambered rolls between 8¾ and 20 in. can be ground on this machine, the maximum length of stroke being 5 ft., maximum length admitted between centers, 7 ft., and the center height from the table, 14 in. The rolls are revolved on their own journals in stays attached to an auxiliary table which can be swivelled to the required camber. The main table carries a driving headstock

and loose headstock and has automatic reversible traverse. The work can be revolved on dead centers.

Grinder, Internal, Chucking, Improved

Churchill Machine Tool Co., Ltd., Broadheath, Manchester, England. [Vol.73,p.284E.] 23.

This improved 20-in. heavy-duty, chucking-type internal grinder, when equipped for wet grinding, has a swing capacity



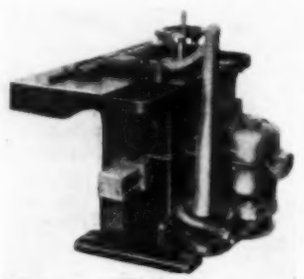
of 20 in. inside the splashguards, and 24 in. over the table with the guards removed. Maximum distance from the standard 18-in. faceplate to the cross-slide is 33½ in. For dry grinding the machine may be fitted with a 20-in., four-jaw chuck.

The machine is of the gear-traverse type, with hand traverse for positioning the table. Adjustment for the sub-base to the workhead is up to 30 deg. included angle. The main driving motor is 5 hp. Feed can be applied to the grinding wheel either automatically or by hand.

Grinder, Surface, Inverted, Vertical, "Planitor"

Jackson & Hunt, 30 Paradise St., Birmingham, England. [Vol. 74,p.25E.] 53.

In this machine abrasive is caried on a rotating disk over which the work is passed. Drive is by a vertical motor, which also drives a dust-exhausting

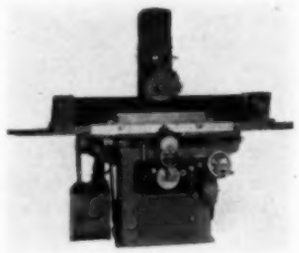


fan. The vertical spindle is heat-treated and ground, and runs in ball bearings. The spindle slide moves in guides, with a vertical feed by hand to within 0.001 in. The slide is arranged to swivel so that a leading edge may be given to the grinding wheel. The machine may be fitted with arc and parallel handle feeds.

Grinder, Surface, Hydraulic

K. Jung, Berlin, Germany. [Vol.74,p.124E.] 119.

This hydraulic surface grinder of large size has the lower portion made in one piece. The headstock is mounted on a completely inclosed guide-col-

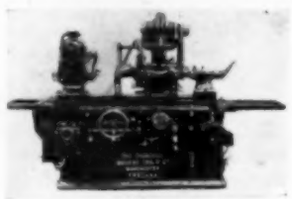


umn. The transverse slide possesses unusually high ribs between both guides to prevent deflection. Quick power vertical traverse is applied to the raising and lowering of the wheel-spindle headstock, the hand feed being locked out automatically. The machine is supplied exclusively for wet grinding.

Grinder, Universal, Turret

Churchill Machine Tool Co., Ltd., Broadheath, Manchester, England. [Vol.74,p.120E.] 114.

This 16-in. turret, universal grinding machine has been redesigned and is now made in two sizes to take lengths of 36 and 50 in. between centers. The turret head locates in three positions and carries an external grinding wheel, an internal



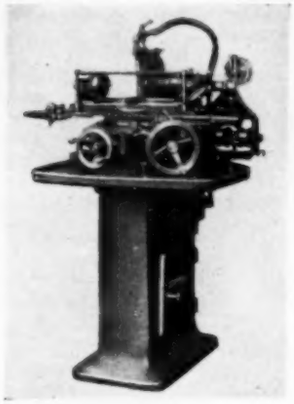
grinding wheel and a spindle for a small cup or face wheel.

The workhead has a variable-speed ½-hp. motor for either dead-center or live-spindle grinding. The wheelhead has a 3-hp., constant-speed motor mounted on a swivelling carriage. Besides swiveling in the vertical plane the table is mounted on trunnions.

Grinder, Universal

Cromwell Engineering Co., (Coventry) Ltd., Coventry, England. [Vol.74,p.91E.] 101.

This small grinder will take work 4 in. in diameter by 12 in. long. Longitudinal traverse is 12 in. and cross traverse 4 in. It may be had either with or without automatic reciprocation to the table. The wheel is 8 in.

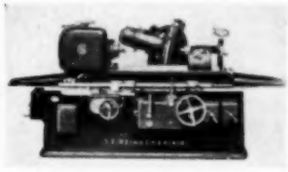


in diameter by ¾ in. wide. The table may be of fixed or swiveling type. Of the two workheads, one has a dead center and driving pulley while the other has a spring center operated by a lever. A reverse is fitted.

Grinder, Worm Reinecker

Dowdings' Machine Tool Co., Ltd., Albert Embankment, London, S.E., England. [Vol.74,p.73E.] 86.

This worm grinder will grind hardened or soft worms of leads up to 1.7 D.P. or 15 module, either right- or left-hand, and up to 10¾ in. diam., the length taken between centers being 23¾ in. The worms are ground either between centers



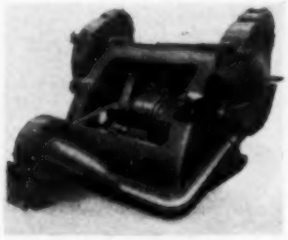
or by inserting the shaft in the hollow work spindle. Grinding is effected in one direction only, the table being reversed. During the return stroke indexing is accomplished, if necessary, for multiple-thread worms.

The lead-screw nut has six speeds, the required lead of spiral being produced by change gears. The table has automatic traverse in both directions.

Grinder, Floor-Stand, High-Speed

Alfred Herbert, Ltd., Coventry, England. [Vol.74,p.193.E]

The above concern is agent for the Lumsden Machine Co., Ltd., Gateshead, the manufacturer of this double-ended floor grinder for snagging operations. Drive is by a self-contained motor and V-belts from the motor pulley to a three-step pulley on the spindle. This pulley is adjustable along the shaft so that it can be moved into position for a higher speed as the wheel



wears. The largest wheel taken is 30 by 4 in., and the distance between the wheels is 54 in. A dust-exhausting system is fitted.

Grinder, Tool, Wet

T. S. Harrison & Sons, Ltd., Heckmondwike, England. [Vol. 74,p.27E.] 58.

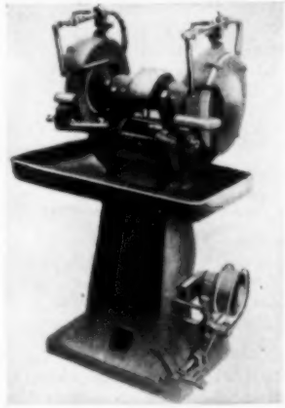
The top half of the body of this wet tool grinder forms the water reservoir, and a displacement float, controlled by pedal,

raises the water level as required. The spindle runs in split phosphor - bronze self - oiling bearings. The two sizes take 14 by 2-in., and 20 by 3-in. wheels.

Grinder, Tool, Tungsten-Carbide

Jones & Shipman, Ltd., Leicester, England. [Vol.74,p.148 E.] 120.

Two wheels on this tungsten-carbide tool grinder are 12 in. diameter by 2 in. wide. Adjustable toolrests are provided, and the wheels are inclosed in steel

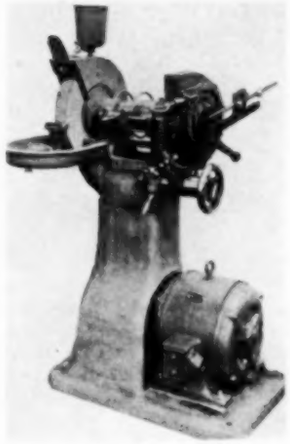


guards. Drive is either by a self-contained countershaft or by fast and loose pulleys.

Grinder, Tool and Drill

Jones & Shipman, Ltd., Leicester, England. [Vol.74,p.211 E.] 152.

This electrically-driven grinder for tools and twist drills has a motor mounted on the baseplate and drives by belt through the column. At one end the spindle



carries a 14 by 2 in. wheel for tool grinding, with the necessary rest and tray, while at the other end is one of the firm's twist-drill grinding heads. Drills from ¼ to ½ in. in diameter can be ground.

Grinder, Band

Ray Engineering Co., Ltd., Southmead, Bristol, England. [Vol.74,p.23E.] 50.

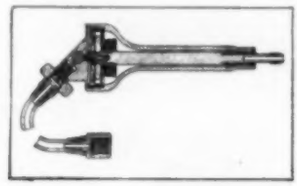
This emery band grinder is fitted with ball bearings in the main drive and on the tension drum. A hand lever is provided for releasing the tension

on the drum, making it safe to change the band without stopping the machine.

Grinder, Pneumatic, Portable

Desoutter Bros., Ltd., The Hyde, Hendon, N.W., England. [Vol.74,p.107E.] 107.

This pneumatic grinder is driven by an impulse turbine and is suitable for air pressures of 30 to 100 lb. per sq.in., the respective speeds being 30,000

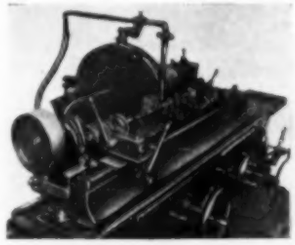


and 70,000 r.p.m. Control is by a push button, with a spring lock for on and off positions.

Cam Grinding Attachment

Churchill Machine Tool Co., Ltd., Broadheath, Manchester, England. [Vol.73,p.216E.] 1.

This cam-grinding attachment provides a more even rotational speed for the work than usual. The driving pinion is mounted in a casing mounted in turn on



trunnions concentric with the work drive spindle. The drive casing oscillates on the trunnions, but is constrained by a link so that the drive pinion is maintained in the same vertical plane as the driven gear.

Lathes

Lathe, Turret, Combination, No. 10

Alfred Herbert, Ltd., Coventry, England. [Vol.73,p.235E] 9.

This turret lathe will swing 20½ in. over the bed covers and 12½ in. over the cross-slide. The spindle is bored 3⅛ in. Maximum distance from the spindle flange to the turret face is 54 in., and the maximum length chased with a standard leader is 15 in.

Starting, stopping and reversing of the spindle from any one of three positions is a feature. A single-pulley head provides 15 forward and 8 reverse speeds the range of forward speeds being from 11 to 593 r.p.m. In addition, the saddle has 16 reversible automatic longitudinal and transverse feeds, ranging from 6 to 240 cuts per in. and 10 to 400 cuts per in.

The turret is indexed by hand. To accommodate variations in thickness, the two stop bars for the saddle and turret slide can be adjusted in unison along the

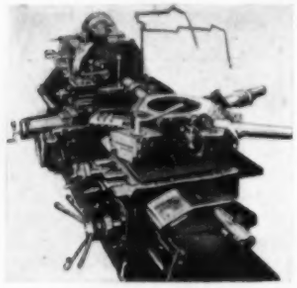
bed. Air-operated chucks are available.

Floor space, 14 ft. 6 in. by 6 ft.; weight, 11,800 lb.

Lathe, Turret, Combination

E. H. Jones, Ltd., Islington, N., England. [Vol.74,p.55E.] 73.

This combination turret lathe is built by the Gebrueder Boehringer G.m.b.H., Goppingen, Germany, and swings 28 in. over the guides for the cross-slide of the saddle or 22¼ in. over the cross-slide. The bed



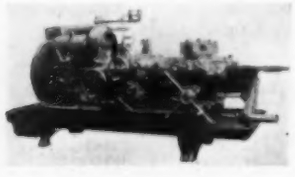
is 12 ft. long and the spindle is bored 6⅛ in. Drive is by single pulley, by d.c. or a.c. flanged motor, or by an a.c. pole-changing flanged motor. Nine sliding and surfacing feeds are provided.

Floor space, 14 ft. by 6 ft. 4 in. when arranged for chuck work.

Lathe, Turret Combination

Alfred Herbert, Ltd., Coventry, England. [Vol.74,p.122E.] 116.

This No. 6 combination turret lathe swings 15 in. over the bed covers and 8 in. over the cross-slide. Maximum distance from the spindle to the turret is 43 in. The hole through the spindle is 2⅛ in., and the largest bar admitted through the draw-in chuck, 1⅞ in. Spindle



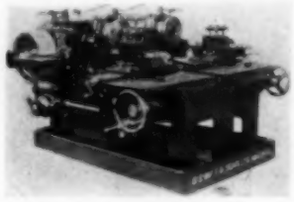
speeds range from 30 to 511 r.p.m. in eight steps. Independent feeds to the saddle and turret slide range from 11.5 to 162 cuts per rev. in eight steps. Drive is by a 5-hp. motor and chain, or by a single pulley.

The steel cross-slide carries a square turret at the front and a toolpost at the back. The turret-slide stop-rod is actuated by gearing from the turret, making the stops self-selecting. An attachment is available for internal and external tapers. A back-facing attachment is also provided.

Lathe, Disk-Turning, Duplex

G. Swift & Sons, Ltd., Halifax, England. [Vol.74,p.102.E] 103.

This 13-in. center, duplex lathe is adapted for turning tapered steel disks up to 15 in. in diameter. The two tool saddles are mounted on V-ways, and total width across the top of the bed is 3 ft. 8 in. Both



driving headstocks and saddles are in duplicate, each independently operated. The sliding gears provide three changes of spindle speeds, from 61 to 110 r.p.m.

Saddles are traversed longitudinally by hand. Both hand and power cross traverse are available. Compound swivel tool rests are fitted. Four rates of feed range from 20 to 80 cuts per in.

Lathe, Center-Drive

Smallpeice, Ltd., Foleshill Road, Coventry, England. [Vol. 74,p.149E.] 123.

On this center-drive lathe the height of centers is 7 in., and the length of the bed is 7 ft. 6 in., admitting 4 ft. 2 in. between centers. It is adaptable to turning the end of axles, axle shafts, and single- or multiple-

throw crankshafts. Both saddles are traversed simultaneously by a central star wheel, so arranged that the initial rotation provides in-feed to the cross-slides. Continued rotation causes the saddles to traverse along the bed in the desired direction. Power feed is provided. Automatic return of the saddles is obtained by a weight and chain on a drum.

Lathe, Form-Turning and Facing, Semi-Automatic, Improved

Burton, Griffiths & Co., Ltd. Birmingham, England. [Vol.73, p.238E.] 12.

The above concern is a distributor for B.S.A. Tools, Ltd., Sparkbrook, Birmingham.

Since the machine is intended

for using tungsten-carbide tools it is now equipped with an air-operated chuck and motor drive. The front turning slide is optional. A finishing cut can be undertaken, the feed being obtained from an eccentric actuated by a small hand lever on the front side.

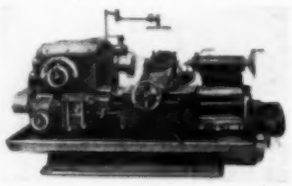
Swing is 8 in.; stroke of the saddle, 10 in.; travel of cross-slide, 1½ in.; and swing of the back arm, 4½ in. The headstock may be either plain or geared. The back arm engages with a former fixed in a vertical position on the longitudinal saddle.

Spindle speeds range between 40 and 400 r.p.m. The feeds are 0.005 to 0.015 in.

Lathe, Multi-Cut, Weipert

Selson Engineering Co., Ltd., Charles St., London, E.C., England. [Vol.74,p.7E.] 43.

Two multiple-tool carriages are used, front and rear, on this machine, their feeds being independent or simultaneous. Two auxiliary motors are flanged at the right-hand end of the bed



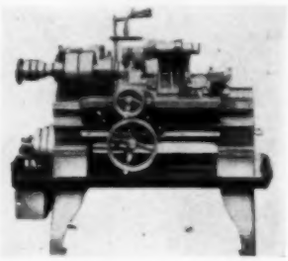
for operating a rapid traverse for the idle motions of the tool slides. The cycle of operations is automatically controlled by electric means.

With the all-geared, single-pulley headstock, nine spindle speeds from 22 to 265 r.p.m. are obtainable. On the front carriage a top slide with cross adjustment sets the tools to cutting depth. Height of centers is 8½ in., with alternative lengths of bed to give 18 and 30 in. between centers.

Lathe, Multi-Tool

Smallpeice, Ltd., Foleshill Road, Coventry, England. [Vol. 74,p.106E.] 106.

These special manufacturing lathes are built in two sizes to swing 12 and 18 in. over the bed and 6 and 9 in. over the slides, maximum lengths between centers being 18 and 24 in. The smaller machine has a 1¾-in. hole through the spindle and the larger a 2¾-in. hole. Additional slides can be added. The long front saddle has a T-slotted top to which one or more cross-slides can be fitted. The rear way of the bed carries the headstock, tailstock, rear forming or



facing slides, overarm and steadyrest. The front saddle has power traverse by means of a drop worm. Two or more rear slides or a rear slide and an overarm may be employed.

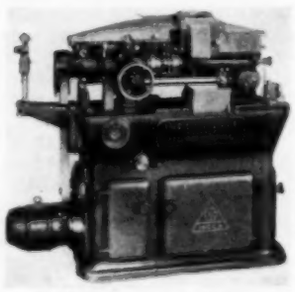
With these lathes, a differential feed method enables roughing and finishing to be performed simultaneously.

Screw Machine, Automatic

L. C. Steinle, Ltd., 81 Marsham St., Westminster, S.W., England. [Vol.74,p.87E.] 94.

Hahn & Kolb, Stuttgart, Germany, are the manufacturers of this Index O R automatic screw machine, which uses a turret. Threading is effected by the overtaking process, and quick succession of operations is made possible by the use of swinging side tools. The chuck will take ½-in. rounds, ⅜-in. squares, the maximum length of bar feed being 1⅛ in. Maximum diameters of thread are ¼ in. for soft steel and ⅛ in. for brass, with minimum diameters of ⅛ in.

Drive is by a flange motor

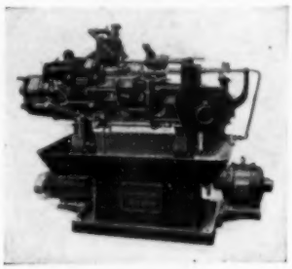


and countershaft or single pulley. Eight main spindle speeds from 925 to 5,000 r.p.m. may be obtained. The rear auxiliary driving shaft runs at a constant speed, three quick-operating clutches being used for the feeding and chucking processes, for indexing the turret, and for engaging the threading device. The upper main camshaft carries a removable block with a cam for engaging the side tools. The machine can also be equipped with a longitudinal turning attachment.

Screw Machine, Automatic, High-Production

J. Ackworthic, Ltd., Coleshill St., Birmingham, England. [Vol. 74,p.87E.] 95.

Georg Wuttig, Dresden-Lobtau, Germany, manufactures this high-production automatic to take rods up to 1 in., the maximum lengths turned being 4¾ in., and the maximum total length

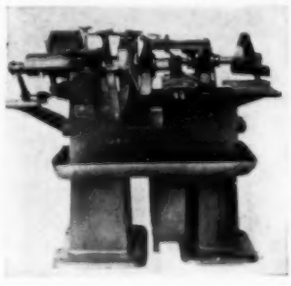


of the job 5½ in. By means of a self-opening diehead, screw threads up to ½-in. Whitworth can be cut. The gearbox provides 10 spindle speeds. Work is chucked by double-collet, toggle levers and chucking lever. Feed is by means of a weight. With each of the 10 work-spindle speeds, 21 camshaft speeds are available; thus the production rate may vary from one piece in 2½ min. to 16 pieces per min. A boring attachment may be fitted.

Automatic, Two-Operation

Atkins (Peterborough), Ltd., Old Fletton, England. [Vol. 74,p.76E.] 92.

This two-operation, high-production automatic has been designed primarily for rapid production of bar stock components which require only to be end-formed and parted-off. Its range is ¾ in. diam. by 9 in. long and its productive capacity



is 300 and 200 pieces per hour. The cutting speed approximates 125 ft. per min.

All controlling cams are mounted on one camshaft. Drive for the camshaft is transmitted from the headstock spindle through spiral gears, a worm gear reduction, and spur gears. The low speed is employed until the tools have been fed half way, when a belt-shipping device throws in the faster speed for the remainder of the cut.

Spindle-Reverse for Lathe, Mechanical

G. H. Alexander Machinery, Ltd., Coleshill St., Birmingham, England. [Vol.73,p.300E.] 31.

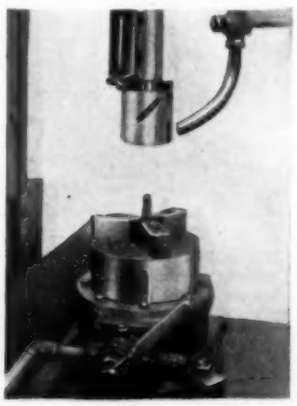
Ludwig Loewe & Co., Berlin, have developed this mechanical spindle-reverse for lathes. The spindles are reversed through multiple-disk clutches, and the unit is used for returning the carriage when screw-cutting, for such jobs as fitting nuts on

screws cut in the lathe, and also for turning with a tool on the rear slide. The multiple-disk clutches are fitted to lathes driven through single pulley, direct flange motor, or base motor and belt drive. Starting, stopping and reversing are controlled by either of two levers, arranged one at the right-hand end of the apron and the other immediately under the headstock.

Chuck, Air-Operated

Alfred Herbert, Ltd., Coventry, England. [Vol.74,p.92E.] 102a.

This pneumatic chuck is made in five sizes, 6 to 18 in., and suitable for use on capstan lathes, combination turret lathes and auto-lathes. The 6-in. size

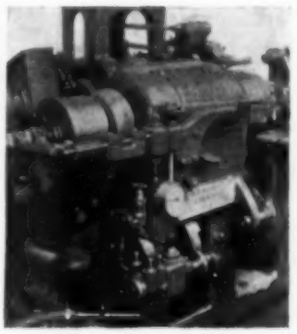


has also been adapted as a vertical air chuck for use on drilling machines to reduce chucking time. The illustration shows a chuck and a Conventry diehead fitted with a standard closing sleeve.

Variator for Air Chucks, Automatic Pressure

Alfred Herbert, Ltd., Coventry, England. [Vol.74,p.194E.] 144.

This automatic-pressure variator, when used in conjunction with the air chucks on the Herbert Nos. 3 and 5 Auto-lathes, enables the work to be gripped in the usual way and to be finished at the same chucking without affecting the accuracy or concentricity. The roughing operations are carried out with a pressure of 80 lb. per sq. in. on the variator. A tappet on the cam drum automatically changes the pressure from high to low, thus releasing the heavy chucking strains so that the finish-machining is done while the work is held as lightly as possible. The secondary pressure is 5 lb. per sq. in. as the minimum.

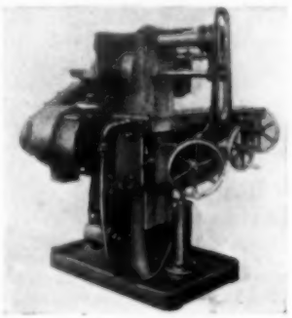


Milling Machines

Milling Machine, Plain, No. 33

Alfred Herbert, Ltd., Coventry, England. [Vol.74,p.73E.] 87.

The table working surface is 38¾ by 10½ in., automatic longitudinal feed, 21 in., transverse adjustment, 6 in., and vertical adjustment, 16 in. Smooth cutting is afforded by the flywheel-



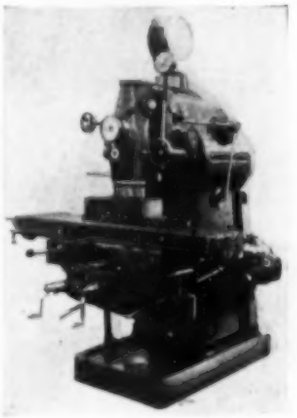
type driving gear. The driving box provides eight spindle speeds from 52 to 700 r.p.m. The spindle is of chrome-nickel, steel, No. 9 B. & S. taper, and it is bored through and provided with a draw bolt. The table is of the flush-top type, and has automatic feed in eight steps from 1⅛ to 8½ in. per min.

Power required, 3 hp.; floor space, 5 ft. 7 in. by 6 ft. 5 in.; weight, 2,300 lb.

Milling Machines, Manufacturing-Type

A. C. Wickman, Ltd., Coventry, England. [Vol.74,p.122E.]

Built by Wanderer-Werke, Schonau, Chemnitz, Germany, this surface milling machine is for mass and batch manufacture, and is semi-automatic in operation. Movement of the table is effected by means of a cam drum. Adjustable stops automatically control the feed and rapid movement (intermittent feed movement) or the fast return movement. Two hydraulically operated plate couplings actuate all controls. The overhanging arm can be loosened and turned down into a depression, thus giving immediate access to the table.

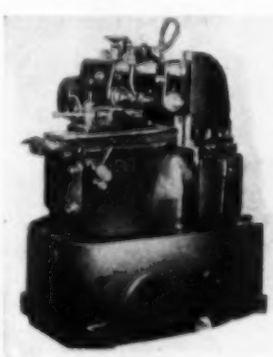


Milling Machine, Lincoln-Type, "Loewe"

G. H. Alexander Machinery, Ltd., Birmingham, England. [Vol.74,p.56E.] 74.

This Lincoln-type milling machine has a table working surface of 27½ by 6¾ in., with an automatic longitudinal movement of 7¼ in. Vertical movement of the spindle slide is 4⅞ in. The feed may be intermittent, and a swiveling table can be used. Automatic operation is obtained by the movement of a single lever. The ten spindle speeds range from 48 to 380 r.p.m., and the six table feeds from 4½ in. to 3⅜ in. per min. Rapid traverse of the table is at 10 ft. per min. forward and 16 ft. return Maximum distance between the table surface and the spindle center is 7⅛ in., and the minimum distance, 2¾ in.

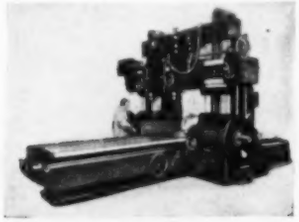
Floor space, with table in extreme position, 51½ in. by 57 in.



Milling Machine, Rail-Type

Koping Mekaniska Verkstad, Koping, Sweden. [Vol.73,p. 325E.] 39.

This rail-type milling machine has four spindles, two vertical and two horizontal, all independent. They can rotate in different directions or can be disengaged independently. Horizontal spindles on the uprights have vertical adjustment by hand or power. Vertical spin-



dles on the cross-slide have power cross feed. This arrangement makes it possible to mill cross-wise when the table is stationary, or to mill diagonally a surface by combining the cross feed of the vertical spindles and the longitudinal table feed. The cross-slide has vertical power quick traverse.

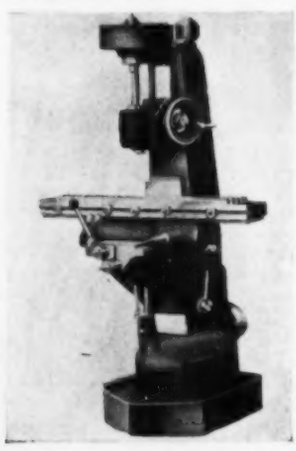
Main drive is by a 25-hp. constant-speed motor. The gearbox provides eight speeds for the horizontal spindles and 16 speeds for the vertical spindles. The table working surface is 13 ft. 1½ in. by 39⅜ in., and the weight is 60,500 lb.. Floor space is 14 ft. 5 in. by 28 ft. 1 in.

Milling Machine, Vertical

Ludwig Loewe & Co., Berlin, Germany. [Vol.74,p.72E.] 84.

Drive for this vertical miller may be by fast and loose pulleys or by flanged motor. The table has a working surface of 6¾ by 27½ in., the automatic longitudinal motion being 17¾ in. Cross movement is 5½ in., and the vertical adjustment 10⅜ in. The spindle slide also has a vertical adjustment of nearly 4 in. The distance between the spindle and the column is 7¼ in.

Spindle speeds, 190 to 1,900

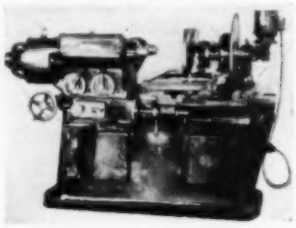


r.p.m., in six steps, are obtained when belt driven. The table has six feeds from ⅜ to 7½ in. per min.

Milling Machine, Cam, Duplex

W. H. Eveson, 30 Paradise St., Birmingham, England. [Vol. 74,p.89E.] 98.

This machine is built by Curd Nube, Offenbach-am-Main, Germany. The work is placed opposite the two spindle heads on the two faceplates when disk cams are to be cut or on two

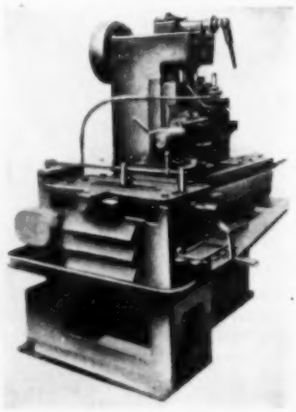


centers when the drum cams are to be machined. More than two spindles can be fitted. The drive is by a single pulley or flanged motor. The pattern is pressed against the profiling roller and the revolution of the work produces the necessary shape. Patterns can be cut.

Milling Machines, Turbine-Blade

J. Holroyd & Co., Ltd., Milnrow, near Rochdale, England. [Vol.73,p.298E.] 28.

The first machine is for radial milling of the serrated roots of rotor blades and the second for milling spigots on the end of the blade. The first machine is illustrated. An upright carries two cutter heads with micrometer and vertical adjustment. Minimum and maximum distances between spindles are 4 and 6 in.

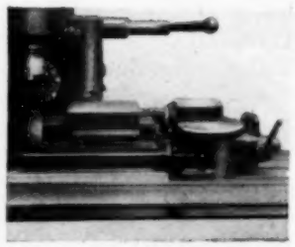


The bed carries a swivel table and work jig. The table has power radial feed and hand adjustment. Minimum and maximum radii swung by the table are 9 and 36 in., and feeds are ⅜ to 6 in. per min. The motor speed range is such that blades of high- and low-carbon stainless steel can be machined, and bronze blades can be dealt with by applying an extra grooved pulley.

Vise, Pneumatic

Alfred Herbert, Ltd., Coventry, England. [Vol.74,p.92E.]

This pneumatic device was primarily designed for use on milling machines. It is made in two sizes, with jaws to open 6 and 8 in. Bolt holes on the 6-in. vise are suitable for the table slots of the Herbert Nos. 18P horizontal and 16V vertical



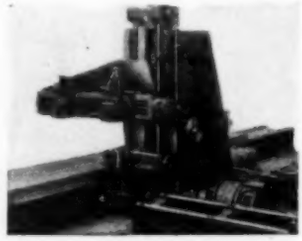
machines, and those on the 8-in. vise for the Nos. 23P horizontal and 23V vertical machines. The adapter plates can be modified to suit the table slots in other makes of machines. Soft removable or special jaws can be supplied.

Planers and Shapers

Planer, Openside, Electrically-Driven

White Machine Tool Co., Ltd., Halifax, England. [Vol. 73,p.237E.] 11.

This openside planer is intended for work 4 ft. by 4 ft. by 30 ft. long. The table is 30 ft. long and the bed is 60 ft. long, being made in three sections. Two standard toolboxes are furnished, and a balanced side toolbox is also mounted on the housing. Drive is by a 25-hp. reversing motor. All gears in the bed are of the double-helical cut type, apart from the rack wheel and pinion. Table reversal is effected by dogs



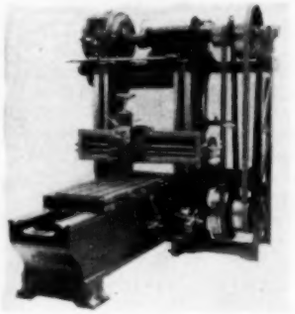
operating a steel lever, which, through a conecting rod, controls the main reversing switch.

Cutting speeds range from 30 to 100 ft. per min., and the return speeds from 125 to 200 ft. per min. Feeds vary from ⅛ to ¾ in.

Planer, Small

Summerskill Bros., Sowerby Bridge, England. [Vol.74,p. 195E.] 145.

This machine will plane work 2 ft. square by 4 ft. long. The 5-hp. motor is coupled directly to a 3-speed gearbox at the top of the machine, and thence drives through belts. The three cutting speeds are 30, 40 and 50 ft. per min., with return at 120 ft. per min. The bed is 7 ft. long by 18 in. deep by 20 in. wide. The tool-box is self-acting in the horizontal, vertical and angular cuts. The automatic



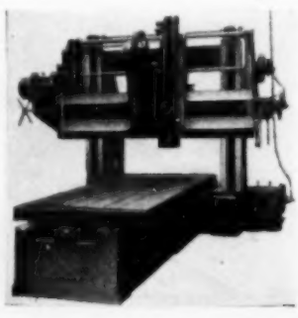
feed motion is by rack and pinion mechanism, operated by a friction disk, which gives feeds ranging from zero to ½ in.

Slotting Machine, Planer-Type

Carter & Wright, Halifax, England. [Vol.73,p.327E.] 42.

This 24- to 26-in stroke slotting machine is motor-driven and is of the planer type. It admits 4 ft. 6 in. between the top of the table and the cross-slide, the distance between housings being 6 ft. 3 in. The table is 12 ft. long by 5 ft. wide. Elevating motion for the cross-slide can be driven either by a pulley or by a separate motor. Drive to the ram is by a 12-hp., variable-speed motor.

The slide, which also carries the Whitworth motion and the driving gears, has both automatic and hand feed, as well as a quick power traverse along the cross-slide. Feeds to both

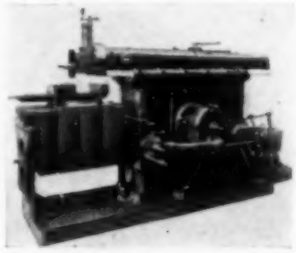


the ram slide and table vary from 1/128 in. to ½ in. Cutting speed is 48 ft. per min. Floor space, 26 ft. 3 in. by 15 ft. 6 in. weight 20 tons.

Shaper, Crank, 36-In. Stroke

Butler Machine Tool Co., Ltd., Halifax, England. [Vol. 73,p.296E.] 25.

This crank-type shaper has a table 36-in. long by 20-in. wide on the top, and 27-in. long by 20-in. deep on the side. Horizontal traverse of the table is 30 in., and the vertical traverse, 15 in. Work 18 in. deep is admitted under the ram, the vertical adjustment of the toolbox being 9 in. Eight speed changes are available through the gearbox, giving a range from 7.1 to 67.9 cycles per min. Drive is by a constant-speed motor through a jackshaft.

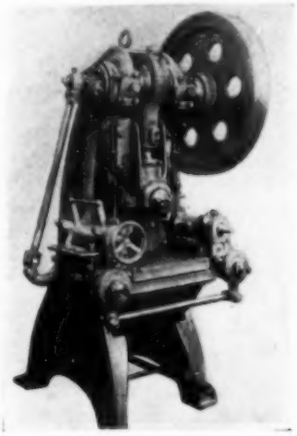


Presses

Press, Inclinable, 30-Ton

S. Wolf & Co., Ltd., 115 Southwark St., London, S.E., England.. [Vol.74,p.172E.] 136b

This press is fitted with a precision roll feed that can be worked direct without necessitating the use of racks or additional gears. The outlet rolls are driven by a special friction

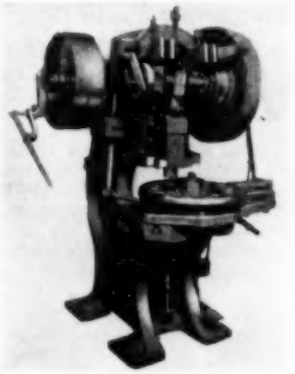


roll feed. The upper rolls and the countershaft can be controlled by means of four brakes. For regulation of the overstretching that occurs during the stamping operation, a special device is provided which increases the speed of the outlet rolls in relation to the inlet rolls. The lifting arrangement for the rolls works independently of the stroke of the press.

Press, Punch, Dial-Feed

Taylor & Challen, Ltd., Birmingham, England. [Vol.74,p. 41E.] 68.

Only one die is required in this turntable-feed press, the articles being placed accurately in position by the carrier plate. The article when pressed is pushed up from the die into the carrier plate again by a bottom extractor. Provision is made for a top extractor.



The carrier plate may be bored with 3½-in. holes. These can be 8, 10 or 12 in number, and fitted with bushings. A long dwell on the carrier plate is provided to allow the article to be drawn, tapered or formed as deep as 1½ in. from a 5-in. stroke. The output is 60 per min. or less, and presses available give from 6 to 100 tons pressure.

Press, Eccentric, Open-Front

Hunton, Ltd., Fitzroy Court, Tottenham Court Road, W., London, England. [Vol.73,p. 249E.] 15.

This Weingarten geared eccentric press is built in 20 sizes from 30 to 150 tons. The ram is guided in slides inclosed at the top to give rigidity. The

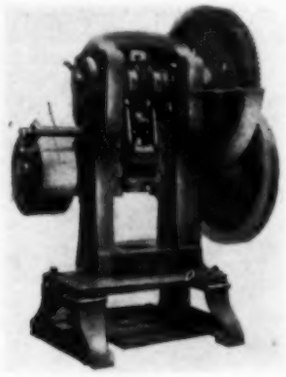
two-section gib has adjusting screws at each end, and closer precision of adjustment is claimed. Variation of the stroke is effected by an eccentric bushing. A pneumatic drawing equipment consists of a pneumatic die cushion and compensator.

On the smallest machine the depth of gap is 7 in. and the maximum thickness of material dealt with is $\frac{7}{32}$ in. On the largest machine the depth of gap is 23⅝ in. and the maximum thickness of material is ⅛ in.

Press, Blanking, Heavy

John Hands & Sons, Belmont Row, Birmingham, England. [Vol.74,p.27E.] 69.

This blanking press has capacity of 100 tons and is one of a range having capacities from 45 to 450 tons. All presses are designed for heavy blanking and clipping work as re-

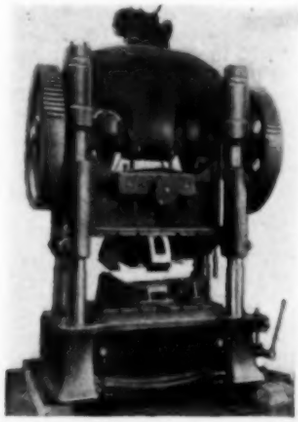


quired in drop stamp shops and are arranged for driving from the lineshaft by fast and loose pulleys. A single-reduction gear is fitted. The crankshaft is carried in adjustable journal bearings. Presses up to 150 tons capacity have an improved half-round key automatic clutch, and above this pressure have all-steel, sliding-block clutches.

Press, Crank, Four-Pillar

Hunton, Ltd., Fitzroy Court Tottenham Court Road, W., London, W., England. [Vol. 74,p.56E.] 75a.

This four-piller crank press is built by Maschinenfabrik Weingarten, Weingarten, Ger-

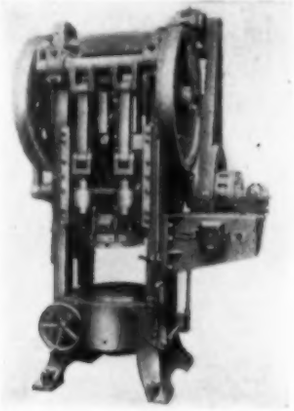


many, and features accessibility of the tool from all sides and the unimpeded insertion and withdrawal of bulky workpieces. For drawing operations the machine has Marquette pneumatic die cushions embodied in the press bed. Pressure exerted is 400 tons.

Press, Toggle Drawing

S. Wolf & Co., Ltd., 115 Southwark St., S.E., England. [Vol.74,p.172E.] 136a.

This toggle-drawing press with pneumatic pressure plate is built by L. Schuler A.G., Goeppingen, Germany. With the use of pneumatic blank holders it is possible to work sheets that have been rolled in bundles. An

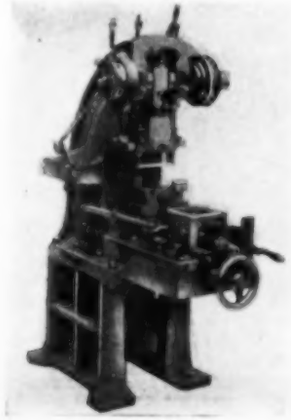


aluminum shell of 6¼ in. diam. by 7⅛ in. deep can be drawn out of a blank of 14¼ in. diam. in one operation. This press has twin gears, the blank holder obtaining its motion from the crankshaft through a pitman rod and driver. The blank holder ram can, in conjunction with combination dies, also be used for cutting operations.

Press, Notching, High-Speed

Taylor & Challen, Ltd., Birmingham, England. [Vol.74,p. 39E.] 65.

Operating at the rate of 700 notches per min., this high-speed press has a special key clutch, together with a friction device in the flywheel. The press stops automatically after completing a



disk. The saddle is adjusted by a handwheel and nut for different notching diameters. A fine screw adjustment regulates the height of the pallet plate, and thus the height of the disk relative to the die. The die bed is adjustable from front to back. Disks from 17 to 3½ in. may be notched.

Drive for Power Press, V-Rope, "Thrapston"

Stanley Croft, Ltd., Birmingham, England. [Vol.74,p.41E.]

The standard Thrapston V-rope drive is applied in this instance on a standard inclinable power press fitted with an

adapter plate carrying an electric motor. The driving pulley is grooved to accommodate four ½-in. V-ropes. These ropes drive on the flat periphery of the standard press flywheel.

Deep-Drawing Device

Joseph Rhodes & Sons, Ltd., Wakefield, England. [Vol.74, p.72E.] 85.

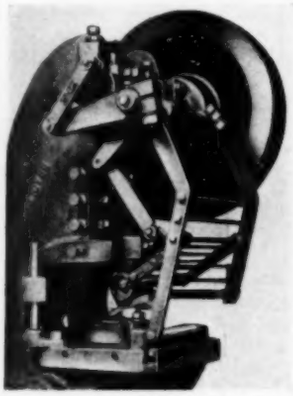
This deep-drawing device for sheet-metal stamping is a self-contained unit, its central tube being screwed into the bed or bolster. A central spindle inside the tube screws into the forming block. When the punch

descends, the pressure pins cause the forming block to rise into the top die. Thus, a stamping 2 in. deep is formed by a 1-in. stroke. A spring returns the mechanism and ejects the stamping.

Press Guard, Long-Pull

J. P. Udal, Upper Dean St., Birmingham, England. [Vol. 74,p.58E.] 77.

When the press commences its downward stroke, the inner guard frame is swung outward and through, that is, inside, the outer frame. If the inner guard meets with no obstruction the outer frame remains stationary, but if it does meet obstruction the hand is gripped between the two frames and pushed to safety. The guard can be set to suit any size and height of tool.



Threading Machines

Threading Machine, Duplex

Alfred Herbert, Ltd., Coventry, England. [Vol.74,p.209E.]

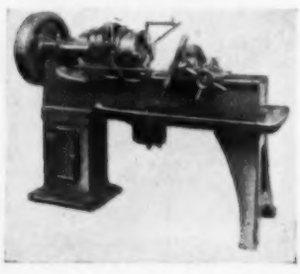
This duplex threading machine is for operations on work previously machined on capstan lathes, auto-lathes, and on which the thread is cut at a second chucking. The height of centers from the tray is 6½ in., maximum stroke of work slide,

8 in., and largest diameter threaded, ¾ in. Drive is by belt from a countershaft to a two-speed cone pulley and reduction gears to the diehead spindles. The bore of each spindle at the front is 1½ in.

Threading Machine, Bolt, 1½-In.

Charles Winn & Co., Ltd., Birmingham, England. [Vol.74, p.28E.] 61.

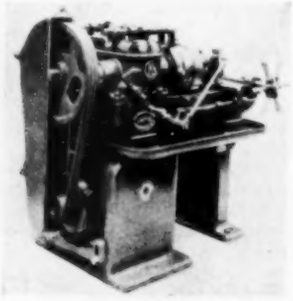
This high-speed bolt-threading machine employs a rotary Landis head suitable for ½ to 1½-in. bolts and also tubes from ¼ to 1¼ in. A cone pulley and gearing give three spindle speeds. Short work can be threaded. The saddle travels 16 in.



Threading Machine, Duplex, for Automobile Parts

Kendall & Gent, Ltd., Manchester, England. [Vol.74,p. 108E.] 108.

This duplex threading machine is arranged with special carriages for holding two rear spring-pivot brackets for motor cars. Tangential chasers are employed in the diehead. Adjustment of the dies for varying diameters without altering

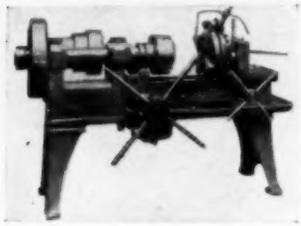


the original setting of the head is controlled by small handwheels on the top of the headstock. The dies open either by hand or automatically. Attached to each carriage is a vise with a quick-acting device. The drive is by a 3-hp., constant-speed motor, driving by Texrope to the main drive shaft. About 120 1-in. bolts can be threaded per hour.

Threading and Cutting-Off Machine, Tube

Charles Winn & Co., Ltd., Birmingham, England. [Vol. 74,p.24E.] 52.

This machine for tubes has a range from ½ to 2 in. Other machines have ranges of from 6 to 14 in. A Landis-type diehead is employed and the drive is by a three-speed cone pulley.



The forged-steel spindle is bored through, and will pass couplings of the maximum size of the tube threaded.

Threading Attachment for Self-Opening Dies

C. Churchill & Co., Ltd., Leonard St., Finsbury, London, E.C., England. [Vol.74,p.173E.]

On machines of the Petermann type to produce a right-hand thread the die must rotate quicker than the bar stock. A special diehead is therefore fitted which can be closed while the machine is working by means of the attachment illustrated. The diehead is secured to the main spindle and for the

threading operation the die is advanced to the work by a cam. A stop makes contact with the screws topping the traverse of the diehead and opening it.

The attachment is available in two models for use on the Petermann No. 10 and No. 10 H.S. machines and on the Nos. 2 and 2A machines.

Other Machines

Broaching Machines, Horizontal

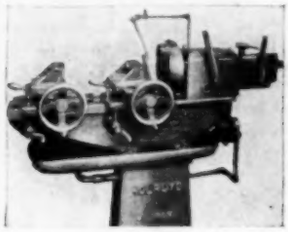
Selson Engineering Co., Ltd., Charles St., London, E.C., England. [Vol.73,p.311E.] 36.

These horizontal broaching machines are built in a range of sizes, the smaller three sizes being driven through a rack from a self-contained single pulley at a cutting speed of 100 in. per min. The smallest machine cuts keyways ¾ in. wide by a depth of ½ in. A larger machine has a capacity of 1⅝ in. wide by 6 in. long. For quantity production, a two-spindle machine cuts keyways up to 1⅝ in. wide, and each spindle can be engaged alternately, so that one is always working. An Enor hydraulic gear pump is employed.

Centering and Facing Machines

J. Holroyd & Co., Ltd., Milnrow, near Rochdale, England. [Vol.73,p.218E.] 2.

Chiefly the headstock of this centering machine has been improved. The headstock is driven by fast and loose pulleys, or may be driven by a motor and single pulley. The chuck spindle is driven from the cen-

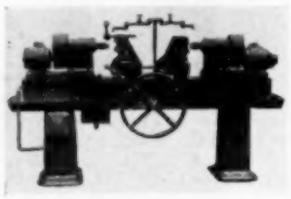


tering spindle by double spur reduction gears running in oil. The centering spindle is moved forward by a hand lever and is spring-loaded to return automatically. The machine illustrated is fitted with a facing head instead of a three-jaw, self-centering chuck.

Centering Machine, Two-Spindle

C. Redman & Sons, Ltd., Halifax, England. [Vol.74,p.183E.] 138.

The maximum length centered in this machine is 24 in., but if required a longer bed can be supplied. Bars from 3 in. down to ¾ in. can be centered. When



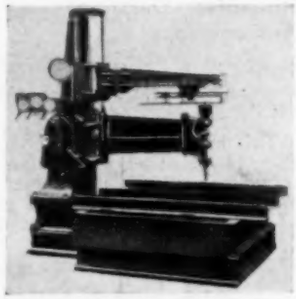
the two vises are in use the minimum length of bar centered is 12 in., or 5½ in. with one vise only. The drilling heads are right- and left-hand. Sensitive feed to the drillheads is controlled by the large handwheel.

Floor space is 6 ft. 9 in. by 2 ft. 9 in.

Cutting Machine, Oxygen, Universal, 55-In.

British Oxygen Co., Ltd., Upper Edmonton, N., England. [Vol.74,p.38E.] 63.

This is essentially a production machine, but is equally useful for single jobs. Steel plates or forgings up to 15 in. thick can be handled. A multi-speed gearbox is mounted on the column, the drive being taken to the profile tracing roller through shafts and gearing. A univer-



sally adjustable templet holder avoids any need for shifting the material. Cutter height may be regulated while the machine is cutting, so that work on uneven surfaces can be done.

The longest straight cut taken is 10 ft.; the largest circle, 4 ft. 8 in. diam.; the largest square, 4 ft. Floor space occupied, 7 ft. 6 in. by 5 ft.

Drop Stamp, Automatic, Light

B. & S. Massey, Ltd., Openshaw, Manchester, England. [Vol.73,p.309E.] 34.

This drop stamp is suitable for light stampings, cold sheet-metal work and hardware. It is made in 100, 150 and 200 lb. sizes for the low-priced market. It is controlled by a treadle and will strike either single blows

or a series of automatic blows of any desired stroke and force within the capacity. The lifting mechanism consists essentially of a clutch actuated by a "fall-bar," so that as the tup reaches the bottom of its stroke, it trips the clutch into action for lifting. The stamps may be driven by a belt or motor.

Engraving Machine, Improved

Taylor, Taylor & Hobson, Ltd., Leicester, England. [Vol. 73,p.308E.] 33.

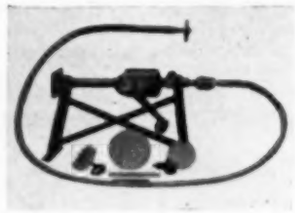
On this engraving machine, a ball-bearing spindle is now interchangeable with the standard machine spindle. A new vise and a new cutter grinder are also employed. The spindle will run at speeds up to 40,000 r.p.m., and can be furnished for use in milling and slotting. The

vise may be squared up either parallel or at right angles to the slots in the table by means of a fence, or may be set at any angle.

Flexible-Shaft Outfits

H. Terry & Sons, Ltd., Redditch, England. [Vol.73,p.308E.] 32.

Flexible-shaft outfits in a hand-operated unit and a motor-driven style are available. The ball-bearing flexible shaft is 6 ft. long and carries a drill chuck



and other fittings. The motor for the power-driven type has a spindle at each end and accessories are provided. With the shaft removed, the hand-powered unit may be used as a breast drill and is fitted with a No. 2 Morse taper socket and ½-in. drill chuck.

Flexible-Shaft Tools

F. Gilman (B.S.T.), Ltd., Smethwick, England. [Vol.74, p.78E.] 60.

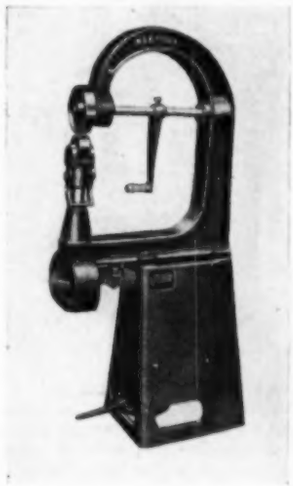
This portable tool, mounted on feet with casters, can be used anywhere in the shop. Power

is provided by an electric motor, which has a horizontal movement of 360 deg. as well as a vertical movement. Shaft speeds are 850, 1,750, 2,375 and 3,000 r.p.m. Drive is effected by means of a rubber belt on four-step cone pulleys. A variety of working heads can be operated off either a straight drive handle or a righ-angle drive handle. A high-speed attachment can be furnished.

Forming Machine, Sheet-Metal, Rotary

Keeton, Sons & Co., Ltd., Sheffield, England. [Vol.74,p. 60E.] 80.

This machine enables the work to pass under the spindle supporting the bottom roller. The machine removes creases

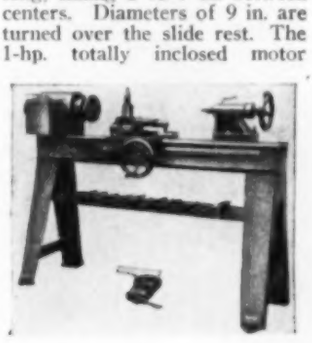


and smoothes the work previously roughed to shape, such as automobile panels, wings and valances. The pressure lever is operated from the front of the machine. A quick release is fitted. The machine will take 21 in. from the center of the rollers to the main casting. Net weight is 672 lb.

Lathe, Wood-Turning, Electric

Wadkin & Co., Leicester, England. [Vol.74,p.272E.] 18.

This electrically-driven wood-turning lathe has height of centers of 6 in. and a bed 5 ft. long, taking 2 ft. 7 in. between centers. Diameters of 9 in. are turned over the slide rest. The 1-hp. totally inclosed motor

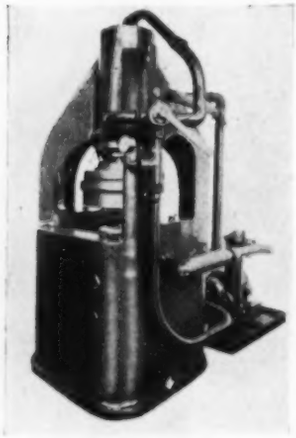


runs at either 2,850 or 1,425 r. p.m. A brake stops the spindle quickly. The spindle is threaded at the front for faceplates and is bored Morse taper. The tailstock sets over.

Hardening Press, Gear

W. Ferd. Klingelnberg Soehne Remscheid, Germany. [Vol.74, p.71E.] 83.

For the prevention of distortion in gears during hardening, this press clamps the work hydraulically between an upper movable and a lower stationary die, and meanwhile the quenching medium is flooded across the work at high velocity. The quenching medium also serves as the hydraulic fluid. The up-

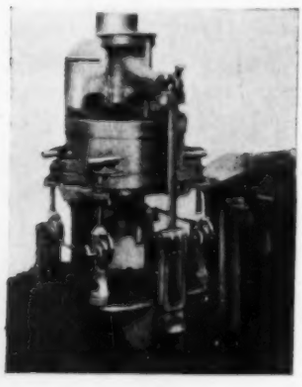


per die is carried at the lower end of a hollow plunger, which moves within the pressure cylinder. Within the plunger is a small centering piston which has a conical end that forces a segmental expanding ring into the bore of the work so as to locate the latter concentrically. The upper die is made in accordance with the shape of the teeth, so that the oil is forced through the teeth.

Molding Machine, Magnetic

Pneulec, Ltd., Smethwick, near Birmingham, England. [Vol.74,p.40E.] 36.

This magnetic molding machine is claimed to be the first to employ this principle. The

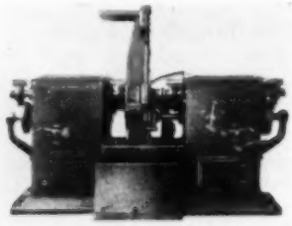


action is positive, without jerk on squeeze or draw, and control is by a pushbutton. The power squeeze trip machine will take boxes up to 27x18 in. Stripping stools can be adjusted according to the size of the box, and round, square or rectangular boxes may be used. The length of stroke is 4 in. The machine can be adapted for plain strip, stripping plate, downsand frame and downsand stripping plate work. Current consumption is 100 amp. at 240 volts. Pattern draw is made on the down stroke by gravity, and the speed is regulated by the oil dashpot.

Nut-Facing Machine, Automatic

Alfred Herbert, Ltd., Coventry, England. [Vol.73,p.249E.]

This automatic nut-facing machine is built by F. W. Kosfeld, Brackwede, Germany. It is available in two sizes, one for ½- and ¾-in. nuts, production be-



ing about 2,000 per hour, and the other for ¾- and 1-in. nuts, production being 1,320 per hour. The machine is entirely automatic. Single pulley or motor drive may be employed.

Pipe-Scouring Machine

J. Holyroyd & Co., Ltd., Milnrow, near Rochdale, England. [Vol.73,p.234E.] 8.

This pipe-scouring machine employs two constant-speed motors, one for driving the scouring spindle and the other for operating the feed and the jaws that grip the pipe. Tubes between 8 in. and 15 in. diam. by 12 ft. 6 in. long can be dealt

with, the revolving scouring head being pushed through the pipe, which is stationary, and which is completely cleaned at one traverse. The scouring head may carry emery blocks or hard steel blocks, which are swung out by centrifugal force. The head, with the snout and spindle, is driven by a 10-hp. motor and three-speed gearbox.

Floor space, 33 ft. by 9 ft. 6 in.; weight, exclusive of motors and starters, 7800 lb.

Polishing Machine, Automatic

W. Canning & Co., Ltd., Birmingham, England. [Vol.74,p. 24E.] 51.

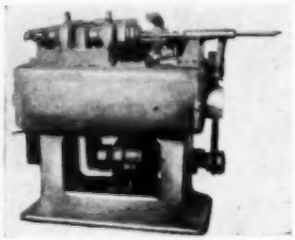
This automatic polishing machine is intended for hollowware in round, flat or semi-circular shapes. The articles to be polished are placed on a

chuck, and the act of swinging the head over to the working position automatically starts the chuck and the reciprocating movement. Screw-operated tilting motion is located in the base, permitting the whole apparatus to be tilted so that the chuck spindle and polishing spindle may run at different angles for removing parallel markings in the work. A universal attachment fitted to the chuck head gives an additional adjustment of the angle of the chuck spindle.

Polishing Machine, Automatic

S. Wolf & Co., Ltd., 115 Southwark St., London, S.E., England. [Vol.74,p.172E.] 136c.

L. Schuler A.G., Goeppingen, Germany, builds this automatic polishing machine for round, drawn metal articles. The pol-



ishing roll is guided automatically by cams and levers, and at the same time is tightly pressed on to the surface to be polished. The polished part is automatically removed from the chuck.

Polishing Lathe, Motor-Driven

W. Canning & Co., Ltd., Birmingham, England. [Vol 74,p.26E.] 56.

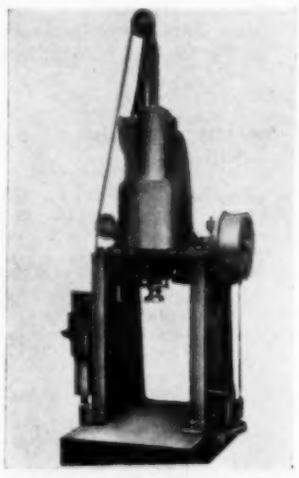
Extended arms are used on this motor-driven polishing lathe to afford plenty of space for awkward pieces. The spindle is driven by a multi-V belt from the inclosed motor. The spindle may be locked by a hand-operated plunger on the top of the

machine. In addition, the spindle may be withdrawn easily after removing of one of the overhanging bearings.

Press-Cylinder-Liner, 20-Ton

Oldfield & Schofield Co., Ltd., Boothtown, Halifax, England. [Vol.71,p.148E.] 121.

This 20-ton cylinder-liner press is an adaptation of the firm's straightening press. The rectangular table base is 4 ft.

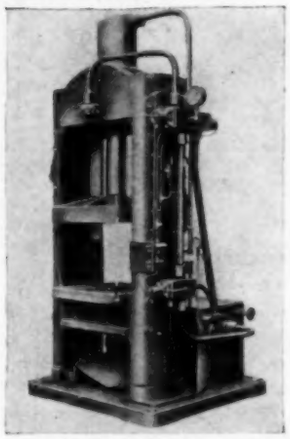


long by 9 in. deep. Drive is by an 18-in. flanged pulley for a 5 in. belt, but a motor drive can be supplied. The spindle stroke is controlled by a pedal on the right. Maximum vertical stroke of the hammer head is 15 in.

Press, Plastic-Molding, Hydraulic

L. C. Steinle, Ltd., 81 Marsham St., Westminster, S.W., England. [Vol.74,p.121E.] 115.

Hahn & Kolb, Stuttgart, Germany, manufacture this high-speed hydraulic press for molding. The pump has a low-pressure stage for providing a large delivery of oil for quick approach and return of the ram, and also a high-pressure stage for the actual pressing operation. Any pressure between 300 and 5,600 lb. per sq.in. can be obtained. One operating lever gives neutral down movement, and up movement of the ram. The ram stroke can be set by two adjustable stops. An eject-



ing device in the lower plate operates automatically on the return stroke. The press is made with platens from 12 to 32 in. square.

Riveting Machine, Pneumatic, Pedestal

Globe Pneumatic Engineering Co., Ltd., 1 Victoria St., Westminster, S.W., England. [Vol. 74,p.229E.] 155.

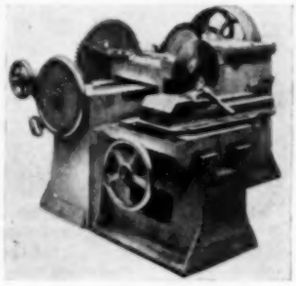
This machine is for riveting ⅜-in. rivets cold in light metal assembly work. The movable, telescopic pneumatic riveter is mounted on the top arm and

the bottom arm carries a small rivet snap. Both arms can be adjusted. The working pressure is 80 lb. per sq.in. and the number of blows delivered per minute is 1,500. Total height of machine, 5 ft. 3 in.

Sawing Machine for Risers

Scriven & Co., Leeds, England. [Vol.73,p.218E.] 3.

This high-speed cold-sawing machine is built for cutting-off risers from gunmetal castings. The main bed has guideways at the top for the saw slide and saw. Another box-section bed is bolted at right angles for carrying the worktable and vise. The 15-in. saw blade runs at a cutting speed of 120 ft. per min. Self-acting feed to the saw is through a friction disk and

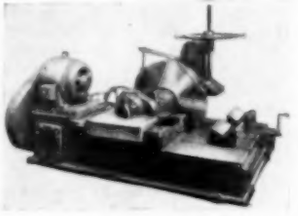


worm gearing. An automatic quick-return motion is provided, and an automatic device, using tappets, stops the feed or return at any required position.

Sawing Machine, Cold

S. Russell & Sons, Leicester, England. [Vol.74,p.25E.] 54.

On this machine the saw is of the inserted-segment type and will cut joists 24 by 7½ in., rounds 12½ in., and squares 11½ in. The width of cut is ⅛ in., and the five feeds range



up to 6 in. per min. Drive is by a 12-hp. motor. Gearing for the feed and quick return motions is totally inclosed in the main gearbox. The feed gear trips prevent overrunning in each direction. The vise consists of an upright carrying a press block controlled by a large handwheel.

Sawing Machine, Circular, Zit

Wearden & Guylee, Ltd., Bradford, England. [Vol.74,p. 60E.] 81.

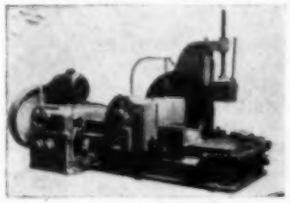
This small circular sawing machine has capacity up to 2 in. round and 1⅜ in. square. The diameter and thickness of the saw blade are 140 mm., and 1.2 mm., respectively. The machine

is suitable for cutting rods and tubes of non-ferrous metals and composition. The drive facilitates regulating the tension on the belt to suit the cutting resistance of different metals.

Sawing Machine, Cold, High-Speed

Carter & Wright, Halifax, England. [Vol.74,p.161.E.] 129.

This 36-in. high-speed cold sawing machine has the saw cut upwards, forcing the saddle down on the bed to eliminate chatter. The blade is of the inserted-tooth type. All controls are placed at the front of the



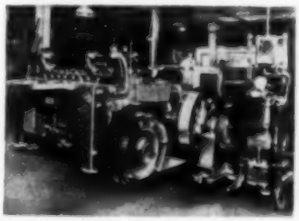
machine. The saddle is traversed by a steel screw and phosphor-bronze nut. Drive is by a 15-hp. motor on the top of the gearbox, through two changes. The feed motion gives five rates of feed for each spindle speed, from ¾ to 8 in. per min. The vise is suitable for square or miter cutting.

Floor space, 8 ft. 10 in. by 5 ft. 10 in., and weight, including motor, 4¾ tons.

Shears, Guillotine, Undercrank, Two-Speed

Brookes (Oldbury), Ltd., Oldbury, near Birmingham, England. [Vol.74,p.23E.] 49.

These guillotine shears are arranged for a two-speed drive in order to cope with a wide range of different thicknesses of metal, particularly where there is not sufficient work to justify the installation of two machines. These speeds are 26 and 80 per min. The two-



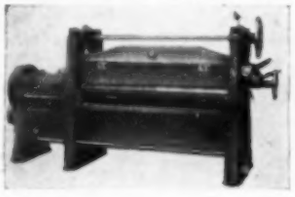
speed drive consists of twin spur wheels working in conjunction with a sliding twin steel pinion. The countershaft runs at constant speed and is flywheeled.

Another feature is a cam-operated holdown, the holdown gate being provided with steel pins fitted with rubber buffers which compensate for variations in the thickness of material. Vertical adjustment to the bottom blade obviates packing up.

Straightening Machine, Plate, Large Capacity

Hunton, Ltd., Fitzroy Court, London, W., England. [Vol.74, p.56E.] 75b.

This large capacity plate-straightening machine is built by Maschinenfabrik Weingarten, Weingarten, Germany. In dealing with uneven plates the local stretching of different parts is



of importance. For this purpose a stretching roll apparatus is embodied between the top straightening rolls and can be adjusted irrespective of the other rolls. All control parts are centrally arranged and scales permit speedy adjustment of the rolls. The gearing for the positive drive runs in an oil bath.

Welding Machine, Spot, 4 Kw.

Holden & Hunt, Old Hill, Staffs, England. [Vol.74,p.39E.]

This spot welder is designed for repetition welding of iron and mild steel up to 20 S.W.G. added thickness and for welding at intervals ⅛ in. added thickness. It operates on single-phase a.c. For d.c. operation some form of converter is

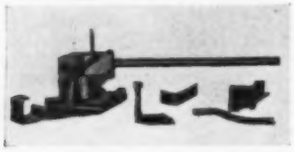
required. The welding arm carriers are adaptable for taking long or short arms to permit handling awkward-shaped work. The standard length is 6 in. The top arm has the usual vertical adjustment, supplemented by a swiveling movement in the carrier arm. The lower electrode is mounted in a heavy, slotted faceplate. The two slots provide for alternative vertical settings, while the length of the slots gives the necessary movement horizontally. A heavy welding pressure is insured by the toggle mechanism at the rear of the machine. Machine and electrodes are water-cooled.

Small Tools

Bending Appliance, Hand-Operated

Mayhew, Ramsay & Co., Ltd. 75, Victoria St., London, S.W., England. [Vol.74,p.74E.] 88.

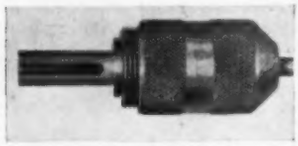
This hand-operated bending appliance is made in two sizes for bending either hot or cold work. Sections up to 1 in. by ¾ in. can be bent cold on the first and 2 x ½ in. on the second. The fixing or clamping jaw is integral with the body. Clamping is effected by another plate, which is provided with two springs. The bending jaw is operated by a long bar lever. For setting to different radii, the steel jaw faceplate has an angular movement controlled by an adjusting screw.



Chucks, Tapping, Compensating

Helsby, Barnes & Co., Rock Ferry, Cheshire, England. [Vol. 74,p. 228E.] 153.

This compensating tapping chuck is for the use of hand taps, the tap being driven from the square by the back jaws of the chuck. The front jaws simply centralize the tap. The chuck shank may be of any type and hand reamers can also be are available, chucking taps up used in this tool. Three sizes to 2 in.



Milling Cutters, Inserted-Tooth, Widia-Tipped

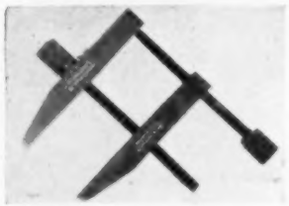
Alfred Herbert, Ltd., Coventry, England. [Vol.74,p.229E.] 156.

The blades are inserted flush with the cutter body, the chip clearance being provided in the body proper. The blades are held in position by the firm's patent locking arrangement. Each blade has a series of transverse serrations which engage with similar serrations milled on a tapered flat on a tool-steel locking bushing. These bushings act as wedges. Sizes range from 5 to 12 in. The 5-and 7-in. cutters have taper shanks, and the larger sizes are bolted to the spindle nose.

Toolmakers' Clamp

Jones & Shipman, Ltd., Leicester, England. [Vol.74,p.161E] 127.

These clamps are available in three sizes, namely, 2½, 3 and 3½ in. opening of the jaws. They are made of 0.45 per cent carbon steel, oil-hardened and ground on the inside surfaces. A spring attachment keeps the loose jaw in place while the clamp is being opened or closed.

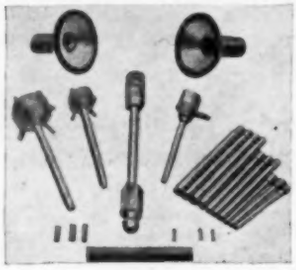


Valve-Seat Tool

Mansion Motor Co., Ltd., 78 Petty France, Westminster, S. W., England. [Vol.74,p.118E.]

The K. B. valve-seating tool will deal with valve seats from 1¼ to 2½ in. A special head is supplied for removing the pocketed valve seating before using the valve-seating tool itself. The tool consists of a head with four cutter slots at right angles and is made in two sizes. The cutters are adjusted by a hardened and ground setting cone.

Another tool is offered for re-truing valves, by which the seats of a set of eight valves can be trued in 20 min.

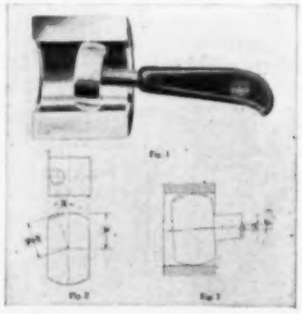


Gaging and Measuring Equipment

Gage, Limit, Spherical

S K F Industries, Stockholm, Sweden. [Vol.73,p.273E.] 20.

This spherical limit gage consists of a spherical body with a plug and a handle that can be removed. The diameter of the spherical body is the minimum diameter of the hole to be measured. Maximum diameter is the distance from the top of the plug to the opposite side of the spherical body. The difference between the maximum and minimum diameter, the tolerance, is therefore represented by the distance the plug extends above the spherical body. The gage does not test the straightness of holes and cannot be used for gaging very deep holes. It is made in standard sizes from 30 to 180 mm. to SMS or Swedish standard tolerances and to other Continental standards.



Micrometer, Quick-Acting

F. J. Witts & Co., 3 Buckingham Palace Road, London, S.W., England. [Vol.73,p.297E] 27.

This thickness gage is intended for measuring wires and plates up to 1 in. thick. Light finger pressure on the end of the plunger brings into operation a spring vernier, and the gage when set can be locked by means of the knurled nut. Quickness of operation is the essential feature. Readings to 0.1 mm., with close approximations to 0.01 mm. on up to 25-mm. lengths can be made.

Micrometers

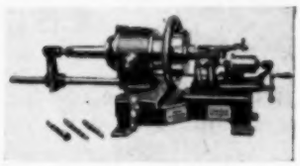
Moore & Wright, Trafalgar St., Sheffield, England. [Vol. 74,p.26E.] 57.

These micrometers are guaranteed to an accuracy of 1/10,000 in. at 62 deg. F., or equivalent to the National Physical Laboratory Test, Class A. In addition, the firm is manufacturing feeler gages in every half-thousandth from 0.0015 to 0.006 in., and every thousandth up to 0.010 in.

Measuring Machine, Twist-Drill Clearance

Farmer, Stedall & Co., St. John St., London, E.C., England. [Vol.73,p.283E.] 21.

This machine, developed by R. Stock & Co., Berlin, Germany, is used for measuring the clearance angles of twist drill points. The drill is rotated in a chuck, and a pin is maintained in contact with the backed-off point at different peripheral settings. Variation of movement due to backing-off is transmitted to a scriber, which records the developed curve of penetration on a rotating drum. An exact measurement of the smaller angles of clearance existing near the drill point is rendered possible.

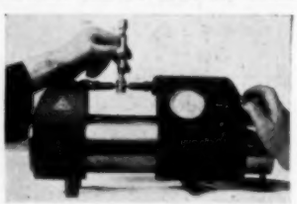


Measuring Machine, Small

Dowdings' Machine Tool Co., Ltd., 38, Albert Embankment, Vauxhall, S.E., England. [Vol. 74,p.193E.] 143.

Carl Mahr, Esslingen, Germany, manufactures this small measuring machine, designed for toolroom use, to facilitate control of the wear of gages. The ground cylindrical bed is 4 in. in diameter by 17 in. long and carries one fixed head and one sliding head. The sliding head contains a dial indicator. Gages up to 4 in. in diameter or 4 in. long can be measured. This machine can be used for measuring the effective and core diameter of screw threads by the addition of interchangeable anvils similar to those used with the Mahr screw thread micrometer. An internal measuring attachment for bores from 1 to 4¼ in. diam. can be fitted.

The measuring machine for screw threads is illustrated.



Testing Machine, Pitch

Alfred Herbert, Ltd., Coventry, England. [Vol.73,p.285E.]

This pitch-testing machine employs a Zeiss microscope with a magnification of 30 to 1 and mounted on a box bed carrying a compound slide. The top slide moves on balls and has longitudinal movement of 11 in. Lateral movement of the lower slide is by means of a screw and

nut. Slip gages are used for pitch measurement and are held between two anvils at the left-hand of the upper slide. For ease of operation, the microscope is mounted at an angle, and the light is projected through a green-colored glass to provide a sharp outline to the thread form. The microscope has a rotating ocular showing Whitworth and metric forms and hair lines for special threads.

Testing Machines, Spring

W. & T. Avery, Ltd., Soho Foundry, Birmingham, England. [Vol.73,p.237E.] 10.

This self-indicating, spring-testing machine is made in a number of capacities and consists of the firm's industrial visible weigher with a special superstructure on the weighing platform. Extension springs

with maximum and minimum lengths of 8 and 3 in. can be tested, whereas the maximum length of compression springs is 6 in., and the maximum compressed length, 3 in. The machine will test more than 800 springs per hour. The pressure applicable ranges up to 150 lb. and is read to ½ lb.

Testing Machine, Universal, Small

Tensometer, Ltd., 73, Southampton Row, London, W.C., England. [Vol.73,p.226E.] 7.

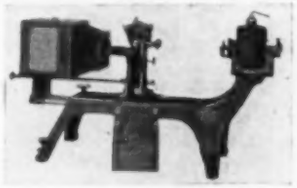
This small testing machine weighs 20 lb. and is used for testing samples of 1/50 sq.in. in cross-section. The machine will test up to 100 tons per sq.in. in tension and will record the yield point, ultimate tensile strength, breaking strain, percentage of elongation, percentage of reduction in area and the Brinell

hardness. These data are secured direct from the machine without calculation. A 5-mm. ball is used, and a table shows the actual Brinell numbers for the "Tensometer" impressions.

Microscope, Metallurgical, Inverted

R. & J. Beck, Ltd., 69 Mortimer St., London, W., England. [Vol.73,p.299E.] 29.

This inverted metallurgical microscope has illuminating apparatus and a microscope fixed on a relatively short non-adjustable base, the camera being extended to any distance between



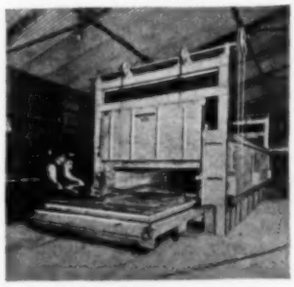
10 and 20 in. from the microscope eyepiece. Both coarse and fine adjustments are provided for the microscope element, and the microscope itself carries a thin glass vertical illuminator or a prism illuminator, both having tilting motions in two azimuths. It also has a collimator and an iris diaphragm. The microscope has two tubes at right angles, one for the camera and one for bench observation.

Furnaces and Equipment

Furnace, Electric, Annealing

General Electric Co., Ltd., Kingsway, W.C., England. [Vol. 74,p.117E.] 109.

This large electric annealing furnace for aluminum is a single-track multi-car type with an effective hearth area 24 ft. long by 7 ft. 5 in. wide, and an electric loading of 150 kw. The



nickel-chromium heating elements are placed on the side walls, in each section of the car hearth and also suspended from the roof. Special switches automatically switch off the current from the car hearth when the doors are raised.

Furnace, Electric, Conveyor-Type, "Birlec"

Birmingham Electric Furnaces, Ltd., George St., Birmingham, England. [Vol.74,p. 28E.] 62.

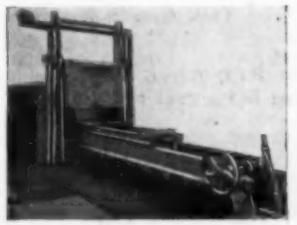
This continuous cast-link conveyor furnace is principally intended for the heat-treatment of

large quantities of small parts. It automatically quenches its charge at the correct temperature. The conveyor belt consists of cast nickel-chromium links joined together by nickel-chromium rods, high flanged sides preventing the work from rolling off. The driving mechanism consists of two cast nickel-chromium drums, one at each end, driven by an electric motor through variable-speed reduction gearing. Discharge may be by vertical drop, or by means of a stripper and chute into the quench tank. The heating elements consists of the firm's heavy-section nickel-chromium strip.

Furnace, Enameling, Electric

Wild-Barfield Electric Furnaces, Ltd., Holloway, London, N., England. [Vol.74,p.76E.] 91.

This electric furnace measures 9 ft. 6 in. long by 8 ft. wide by 6 ft. high, and the maximum input is 110 kw., the power to maintain 900 deg. being only a small fraction of this amount. The heating elements

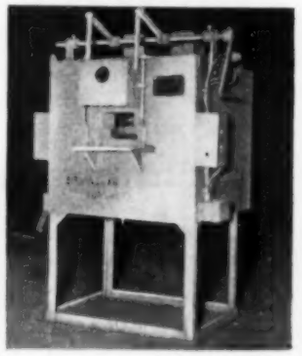


are placed in the roof, walls, floor, and door. The door is electrically operated by means of push-button controls. Full automatic temperature and time control is fitted.

Furnace, Hardening, for High-Speed Steel, "Birlec"

Birmingham Electric Furnaces, Ltd., George St., Birmingham, England. [Vol.74,p. 42E.] 71.

A range of furnaces has been developed for hardening high-speed steel tools. A neutral or slightly reducing atmosphere is



provided. Globar heating elements are employed and extend along two sides of the furnace.

A range of small box-type furnaces is offered in connection with the foregoing furnaces. They serve for preheating and tempering requirements and can be used for hardening and other heat-treatment processes requiring temperatures up to 1,000 deg. C.

Furnace, Semi-Rotary, Non-Crucible

Armstrong, Whitworth & Co., Ltd., Newcastle-on-Tyne, England. [Vol.73,p.20E.] 6.

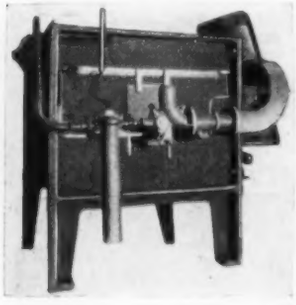
This semi-rotary, open-flame, non-crucible furnace has a steel barrel and a lining of refractory

brick. Two burners, for either gas or oil, fire directly opposite each other. Charges of from 50 to 400 lb. can be dealt with. The lining will give from 600 to 800 heats. Air pressure of 1 lb. per sq.in. is required. Capacities available are 350 and 1,000 lb. in. brass.

Preheater for Oil Furnaces

B. & S. Massey, Ltd., Openshaw, Manchester, England. [Vol.73,p.326E.] 41.

This preheater for oil furnaces consists of cylindrical cast-iron vessel carrying a heating element within it. The oil enters the vessel at one side and leaves at the other. The chamber is open at the top and the heating element is arranged with a flange which bolts on.



Stirring Apparatus for Salt-Bath Furnaces

Brayshaw Furnaces & Tools, Ltd., Hulme, Manchester, England. [Vol.74,p.228E.] 154.

This automatic stirring apparatus causes the work to be heated more rapidly. On depression of a foot lever the work-holder is withdrawn from

the salt and rests at the surface as long as necessary for unloading and reloading. Power is furnished by a one-third-hp. motor through a worm drive.

Transmission Equipment

Gear Reduction Units, "Pericentric"

David Brown & Sons, Ltd., Huddersfield, England. [Vol. 74,p.162E.] 131.

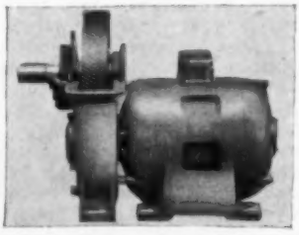
"Pericentric" double- and triple-reduction gear units have been introduced by the above company. The layshafts of a double-reduction drive are duplicated, and the essential feature lies in the manner in which the loads on the two layshafts are equalized under all loads without the use of springs or flex-

ible gears. This is effected by providing the first-stage or the second-stage gears, or both, with single-helical teeth, and carrying the shafts in a bearing arrangement which permits the shafts to float axially. The pinion may be overhung. The arrangement is for use with flange-mounted motors, the driving pinion being carried directly to the end of the armature shaft.

Speed Reducer, "Rapiducer"

Power Plant Co., Ltd., West Drayton, Middlesex, England [Vol.74,p.170E.] 133.

Each driving unit consists of electric motor and double-helical gears available in sizes to transmit from 1 to 100 hp.

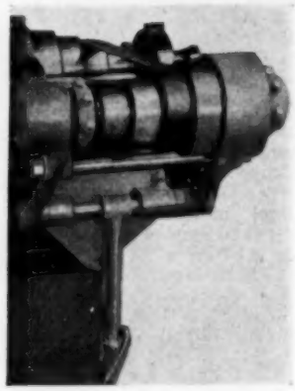


Ratios available are 6 to 1 and 25 to 1. The units are available with squirrel-cage and slip-ring a.c. motors and also with d.c. motors. The motor is secured to the gear casing, alignment being obtained by machined spigot, and no baseplate is needed.

Reduction Drive for Machine Tools, Electric, Kleiner

Himmelwerk, A. G., Tubingen, Germany. [Vol.74,p.10E.] 48.

This geared electric motor for slow speeds has been developed by H. Kleiner, St. Georgen, Germany, and is manufactured by the above concern. It works on the differential principle. The rotor and the stator housing rotate in opposite directions. Current is admitted to the coils by means of slip rings on the rotor shaft. The housing carries an internal gear, a gearwheel with internal teeth and the shaft rotor a spur gear, the two parts being interconnected by a silent gear, which is stationary and held in the flange or bearing carrying the rotor shaft. When under load the power of the free rotating part is transmitted completely to the stator housing by means of the silent gear. The ratios range from 1:2 up to 1:10.

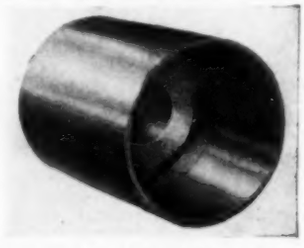


Miscellaneous Equipment and Supplies

Pulleys, Rim, Tubular-Steel

H. Lowe & Sons, Ltd., Royton, Lancashire, England. [Vol. 73,p.251E.] 17.

These pulleys with steel rims have machined bosses of cast iron or steel. Hard wood or aluminum bosses are available where lightness is essential. The

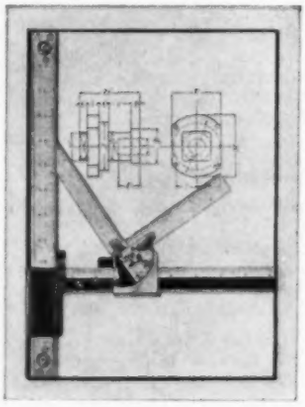


boss may be adjusted to any position relative to the rim. These pulleys are made in ½-in. sizes from 3 to 12 in. in diameter, and up to 12-in. face, and may be either flat or crowned.

Drafting Machine

Moul & Co., Ltd., 21 Old Queen St., Westminster, S.W., England. [Vol.73,p.273E.] 19.

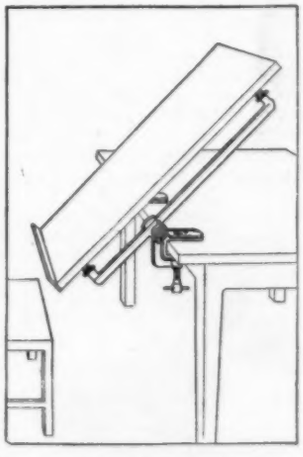
This drafting machine combines a drawing board, T- and set-squares, protractor and scales. It is made in three sizes, the smallest measuring 9½ by 13½ in. and the largest 27½ by 19½ in. The base is formed by an aluminum plate, on which a block of 20 paper sheets is clamped by means of a compressed-wood bar at the left-hand side. Sliding on the left-hand bar is a metal piece forming a head for the T-square blade.



Tilting Device for Drawing Boards, "Hanke"

Buck & Hickman, Ltd., Whitchapel Road, London, E., England. [Vol.74,p.10E.] 47.

The drawing board is secured to two steel bars, one at each side. Each bar is carried in a short slide which pivots in a



clamp fastened to the table. Two types are available, one for imperial drawing boards up to 32 by 23 in., and the other for the double elephant and antiquarian size boards, taking up to 42 by 29 in. or 54 by 32 in.

Hoists, 1-Ton

Matterson, Ltd., Shawclough, Rochdale, England. [Vol.73,p. 299E.] 30.

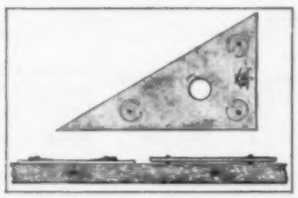
For the electric hoist a 1-hp., totally inclosed, ball-bearing motor is employed, with a drum

controller. For the pneumatic hoist, a four-cylinder rotary motor is used, the air pressure required being 80 lb. per sq.in. A self-sustaining brake is employed, no pawl being used. These hoists are intended for lifting small loads at fairly high speeds.

Setsquares, Celluloid

A. G. Thornton, Ltd., King St., West, Manchester, England. [Vol.73,p.297E.] 26.

Transparent-celluloid 45- and 60-deg. setsquares have been placed on the market. Smudging of the drawing paper by the constant movement of the setsquare is eliminated by having three circular tongues cut

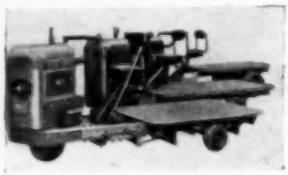


in each of the three angles and fitted with nickel-silver pins. Domed heads of the pins alone touch the paper when the setsquare is being moved about.

Truck, Gas-Engine Driven

Brett's Patent Lifter Co., Ltd., Coventry, England. [Vol. 74,p.90E.] 99.

Several styles of this self-contained, gasoline-engine-driven truck are available. The power unit is mounted over the front wheel so that the head can turn

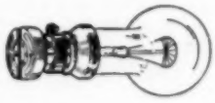


in a complete circle. The three types manufactured are: a low-level platform truck fitted with a quick-action hydraulic elevating platform; a standard, low-level platform type, and a truck for long-distance haulage. A special type is fitted with a small elevating crane capable of lifting weights up to 1,400 lb.

Protective Skirt for Electric Lamps

Benjamin Electric, Ltd., Tariff Road, Tottenham, N. England. [Vol.74,p.77E.] 93.

Since the cap of a screw-type lamp, forming one of the contacts, is electrically alive when the current is switched on, a



skirt is now supplied. A cadmium-steel collar holds the skirt in claws while at the same time gripping the neck of the existing holder through the medium of a cork liner.

Welding Tank Stand, Portable, "Alda"

British Oxygen Co., Ltd., Upper Edmonton, N., England. [Vol.74,p.39E.] 64.

This portable welding tank stand is intended for an oxy-dissolved acetylene welding plant. The cylinders can be quickly mounted and when in position are held by a simple locking device. Receptacles hold the necessary welding rods and fluxes.

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NEWS

Machinery Exports Hold Steady

Since December, five out of six monthly totals for machinery exports fluctuated between $12,000,000 and $12,700,000, it was revealed by the Industrial Machinery Division, U. S. Department of Commerce. These figures indicate that stabilizing influences are at work, and that by comparison the export machinery trade is not off so far as other lines. May business was $12,494,000, above April figures of $12,068,000, and a decrease of 42.4 per cent from the May, 1930, total of $22,724,000.

As usual, exports of metal-working machinery were of major importance. The total of $3,074,672, established during May, is a creditable increase over the April total of $2,817,000 and compares favorably with the average monthly shipments of 1930.

No Pick-Up in German Machine Industry

Whereas in former years the receipt of orders in the German machine industry generally increased during May, the situation did not improve during that month of 1931, according to German trade information received by the U. S. Department of Commerce. The average weekly working time remained unchanged at about 42 hours, and the degree of occupation to 44.7 per cent of capacity. The few lines showing increases were agricultural machinery, pumps, cranes and other hoisting machinery, building machinery and foodstuffs machinery. Declines in other lines, however, offset these gains so that further curtailments are looked for.

General Aviation To Be Reorganized

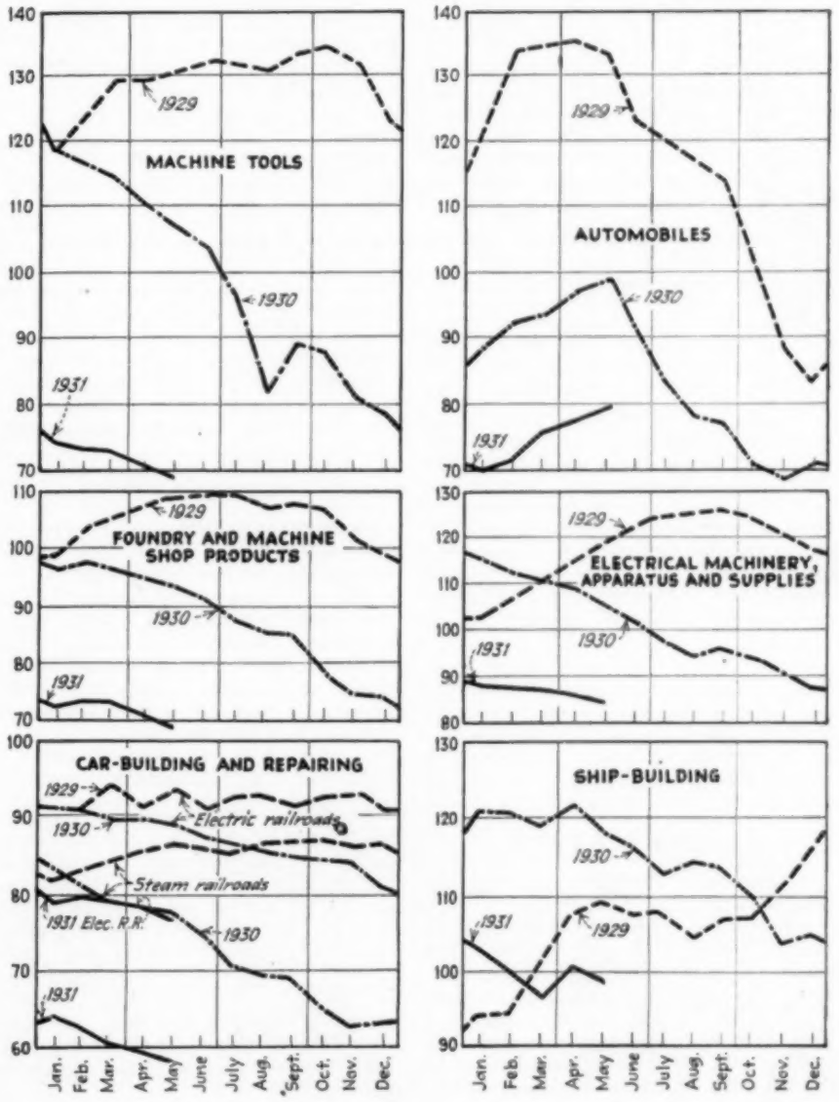
The first indication of reorganization of the General Aviation Corporation, the aviation unit of General Motors, was the appointment of HERBERT V. THADDEN as acting chief engineer to replace ALBERT A. GASSNER, resigned, formerly chief engineer of the Fokker Aircraft Corporation. The production end of the company's aircraft business already has been reorganized, and the corporation plans to enter the field of metal plane designing with the formation of the new Metalair Corporation.

ANTHONY G. H. FOKKER resigned last Friday as director of engineering for General Aviation, but will remain as a director. Mr. Fokker announced plans for the formation of the International Fokker Corporation, with the Dutch company as the nucleus, for construction of aircraft plants in all parts of the world not now served by a Fokker company or licensee. An American plant may be constructed in New Jersey. Mr. Fokker explains that the step was taken because of reluctance by General Aviation to go into world wide activities at this time. Mr. Gassner will join Mr. Fokker in his new enterprises.

I.C.C. Rejects South-to-North Rate Rise

The Interstate Commerce Commission has rejected proposals of the southern roads to increase freight rates from south to north on the "special iron" list which embraces rough iron castings, pipe fittings, steel bars, hoop steel, nails, and wire. It was the railroads' original intention to apply in lieu of the present commodity rates a rating of 8th class, which is equivalent to 30 per cent of first class rates, in an attempt to place rates from the south on the same percentage basis of first class as in the north. As first class rates from south to north are substantially higher, however, than those within northern territory, southern producers would have had to pay on a higher basis of rates to the northern market than their competitors in northern territory.

TREND OF EMPLOYMENT IN METAL-WORKING INDUSTRIES
Monthly average for 1926 = 100. Data supplied by the Bureau of Labor Statistics.



THE . INDUSTRY .

Progress in Metal-Working and Machinery Markets

OF THE nine districts reporting, three show slight improvement, four find no change and two admit slight recessions. Definite details of automotive purchases are generally lacking as compared with last week, and the volume is less. Model changes should give rise to further business from this source in ten days according to Detroit opinion, and Milwaukee concurs in this feeling. Otherwise, the usual seasonal slackening is making itself felt in addition to that of vacations and shut-downs. Hope — a human failing — now looks for a pickup in the fall.

NEW ENGLAND finds improved sentiment, one concern getting a sizable order for cutting equipment and another a retooling program for an automotive concern. Buffalo sees reason for optimism, particularly in late summer and expects to find several large concerns coming into the market.

CHICAGO recedes on an ebb tide of sales because of vacations and shut-downs, and July and August are forecast to be below June. Cleveland also is in the same boat with Chicago, and is anxiously looking toward Government buying for the Dayton airport. Philadelphia remains stationary and sees little hope for early action from the railroads or industrials.. Cincinnati, with no present increase in sales, believes inquiries indicate quicker closing than formerly, and finds it easier to develop prospects. New York has shown no improvement and expects none until fall. Nothing has been heard about the order for 17 lathes for the Brooklyn Navy Yard. Detroit, despite its hopes for early automotive business, finds that July business lags. Milwaukee reports no general change, but that automotive, electrical and implement orders should materialize soon.

DETROIT

Machinery and machine-tool men are looking forward hopefully toward fall with considerable assurance that business will be materially improved. The agreement of the automobile manufacturers to concentrate model changes at the beginning of the year is being adhered to with more tenacity than might have been expected, and there seems to be no doubt that within about ten days orders will be coming in for equipment to produce 1932 models. Frame, transmission and body designs are to be the most radically changed features of the new cars.

June business, although worse than January forecasts anticipated, was better than the more recent outlook indicated. July business is still lagging, but several dealers report prospects that will gradually increase their output, in some cases to capacity, within six weeks.

MILWAUKEE

No particular change is reported, but manufacturers and dealers believe that, if conditions continue along through the summer at about the present levels, the much awaited fall business revival should be more of a certainty. A fair sized order for automotive export has been received. Several concerns are looking to Detroit to place business in the near future. New business and inquiries from electrical and implement manufacturers are expected to materialize before long. While not large, inquiries are from sources considered to be real prospects for business within sixty to ninety days. Meanwhile, there is a fair sprinkling of orders for single pieces of equipment.

CINCINNATI

Increased optimism among machine-tool manufacturers is not due to improved market conditions, but is due to the "prosperity cheerfulness" wave. One favorable symptom is that a larger percentage of inquiries indicate that purchases will be made without delay. Agents are making some gains in developing prospects. A fair number of inquiries was received.

CHICAGO

Business conditions are at a very low ebb because of vacations and short-time operations. June business dropped below that of May, and July and August are forecast for further recession unless unforeseen circumstances should arise. Inquiries received indicate few early closings. Some quarters are optimistic for the last quarter of 1931, but the prevailing opinion is that, although some pick-up may be expected, a general resumption of activity is improbable this year.

CLEVELAND

Sales are lower due to vacation periods and little hope is seen for any pickup during July or August. Dealers report a dribbling of orders for small items and parts. Shaker Heights school board awarded contracts for $9,000 worth of new tools for its new high school. Cleveland dealers are anxiously waiting for the news of the allocation of new funds by the Government for tools for the Dayton Airfield.

BUFFALO

With some improvement in July, slight optimism appears in the gloom. Inquiries indicate that there will be some good business closed before the end of the summer or in early fall. Some of the larger industries seem to be in the market at last. Much of the business placed has been for public schools.

One electrical equipment dealer reports better business than any time in three months. Contractors' equipment remains extremely weak.

PHILADELPHIA

No change is noted in the Philadelphia area since two weeks ago, and there is little hope of improvement. Railroads show no indication of making purchases in the near future, and the few inquiries received from industrial plants hold little hope for early closing.

NEW YORK

Dealers report early July sales volume unchanged from June and inquiries mostly listless. Vacations, shut-downs and the seasonal slackening point to a quiet summer. The many prospects that need equipment are "sold," but can't sign on the dotted line. In from 60 to 90 days some of this business should be shaken loose. Until then it will be a case of beating Old Man Overhead.

NEW ENGLAND

June totals showed no general improvement over May sales, but early July displays a somewhat improved sentiment. The closing days of June rewarded salesmen with more business than any like period of the month, action from automobile centers being largely responsible.

One plant booked a sizable order for cutting equipment, and another is engineering a retooling program for automotive corporations. Every possible economy is being practiced everywhere, however. Officials of large companies, known to have planned machinery additions, are waiting for more orders before placing requisitions. Revere, Mass., is planning a high school addition with six manual training departments.

WEEK . BY . WEEK

BUSINESS BAROMETER

Trends in General Business throughout the world

THEODORE H. PRICE
Editor, Commerce and Finance, New York

IT IS difficult for us to appreciate the height of a cliff unless we look at it from the bottom as well as the top, and the hazards of the financial situation that existed in Europe were not appreciated until President Hoover averted them by arranging the intergovernmental moratorium which was finally confirmed on July 6.

Until the question had been opened and the world became apprised of the fiscal difficulties in which the European Governments had become involved there was a disposition to assume that the threatened crisis could be averted by some financial legerdemain. That this assumption was a mistake soon became evident, and civilization is greatly indebted to all those who lent a hand in arranging the *modus vivendi* that has been agreed upon for the year ending June 30, 1932.

But the plan accepted does not add to the world's wealth or resources, nor does it justify the expectation that prosperity can be re-established by a gesture. Hard work and economy are more necessary now than they ever were, and the appreciation of this fact led to the sudden reaction in the stock market and commodity markets which took place when it was finally announced that the Hoover proposal had been agreed to in principle.

There is much that might be said with regard to the interpretation that has been put upon the plan and its effect. A discussion of the possibilities is, however, a waste of time, and the refrain

> "Work when the day grows brighter,
> "Work in the glowing sun"

is particularly apposite at a time when men are being brought to realize that "economy is wealth."

For this reason it might be a mistake to give undue importance to the minor fluctuations in last week's markets. On most of the exchanges as well as in the more important commercial centers prices have moved in sympathy with the news and fluctuations of the stock market. The stock market was in turn governed by the news from Paris. When the moratorium agreement was finally announced there was a disposition to take profits that led to a temporary decline.

What the future has in store for us remains to be seen. No one is disposed to attempt prophecy with regard to a situation that is so complex. The cynics insist that the recent negotiations are the first step in a long campaign that has for its objective a reduction in the reparations to be paid by Germany. The optimists take the opposing view, and urge that it will not be possible for Germany to pay anything unless she is put in a position to earn it. Both claims may be hypothetically true, but so many other conclusions can be drawn from the admitted facts that the most accurate logician will find it difficult to maintain a dogmatic position with regard to the present or the immediate future.

In this country a slight improvement in business is conceded by almost everyone. But there is an admitted overproduction in three of our most important non-agricultural commodities. They are coal, oil and lumber. Just how a market is to be found for the quantity of these articles that the United States and Canada can produce is difficult to say. One important lumber merchant has suggested that a conference between the Canadian and American owners of uncut lumber should be arranged, with a view of following President Hoover's example by agreeing upon a "lumber cutting holiday" for at least a year. This tendency toward the appointment of a czar with absolute power whenever a specialized business becomes unprofitable is spreading. The moving picture folks were the first to adopt it. They seem to agree that it is a success, and it may be that we will soon find our supply of everything from breakfast food to zinc under the control of a dictator who will regulate the demand as well as the supply in accordance with his own ideas of what his subjects need or are entitled to.

Of course, this is an exaggeration, but the American tendency toward bureaucracy is making itself felt in many unexpected quarters. It has recently been pointed out that the American expenditure for Government totals about $13,000,000,000 a year. Of this, approximately one third is spent by the Federal Government, 13 per cent by the State Governments, and the balance of about 50 per cent is spent by local governmental agencies, including cities, counties, school districts, port authority organizations and other recently formed agencies for public improvement.

In New York City alone work has just been commenced upon a sewage disposal plant that will cost $300,000,000, and other plans which involve enormous expenditures are under consideration. Their adoption will provide work for many of the unemployed, but they will also lead to increased taxes.

If the opposition proves futile and the money is spent as planned we may see another period of inflation in this country, and those who are public spirited as well as wise will probably elect to throw their influence on the side of economy. Perhaps this is well, for the outlook is otherwise satisfactory, and we may get another speculative boom if the influences that make for it are unrestrained.

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THE BUSINESS WEEK

July 15, 1931

Security and commodity markets show the enervating effects of unduly drawn-out dickering over the debt moratorium and of increased skepticism regarding its adequacy in meeting the European emergency—both undoubtedly the outcome of exaggerated and impatient expectations. Our index for the latest week registers some slight reaction from the sharp slackening of business in June, but it is still too early, and too contrary to the usual seasonal trend, to expect any conclusive evidence of the immediate influence on the level of production and trade of new psychological and financial factors now in the picture. The stabilization of commodity prices in June is clearly encouraging, as are many indications of strength in the domestic business structure. The outcome of the seriously strained situation in Germany is still uncertain, and the direction of domestic Federal Reserve policy cannot as yet be definitely determined. But the European outlook has unquestionably improved as a result of the moratorium move and energetic international financial cooperation, and the apparent indications are that the Federal Reserve authorities have embarked at last on an aggressive expansion policy through open market operations. Such a policy is not only enforced by the necessities of the situation but supported by the unparalleled credit position of the Reserve System. If it is pursued persistently every precedent of previous periods of recovery from depression points plainly toward progressive and possibly rapid improvement.

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BUSINESS ITEMS

The Square D Co. of Texas, a subsidiary of the Square D Co., Detroit, recently opened its new factory at 3111 Polk Ave., Houston, Texas. The Square D Co. of Texas is the successor to the Diamond Electrical Manufacturing Co. of Texas, which was organized in 1928. L. W. MERCER is president and W. S. WORCESTER is secretary-treasurer. E. S. CONRAD, for ten years Square D Pacific Coast district sales manager, is vice-president and general manager of the Texas company. W. F. WILSON has charge of the production and engineering and F. STARK is factory superintendent.

The Jenkins Machine Co., Sheboygan, Wis., manufacturer of tools and other equipment for woodworking plants, has filed a voluntary petition in bankruptcy in the federal court of Milwaukee, admitting liabilities of $296,675 and claiming assets of $237,007. Bowler & Bowler, Sheboygan, Wis., are attorneys for the petitioner.

The Reed-Prentice Corporation and the Rivett Lathe & Grinder Corporation after July 1 will occupy a new Detroit office at 6-246 General Motors Bldg., with DAVID C. FORSMAN as manager.

In accordance with annual practice, the Timken Roller Bearing Company plants will be shut down from July 16th to July 29th, for the regular summer vacation.

During the past month machine-tool exports of Great Britain amounted to £160,000, of which £90,000 went to Soviet Russia, we are advised by our London office.

PERSONALS

HANS BILLETER of Billeter & Klaaz, Aschersleben, Germany, arrived on the Europa for a tour of American machine tool plants.

A. J. BRANDT became Western sales manager of Steel & Tubes, Inc., on July 1, with offices at 1330 Peoples Gas Building, Chicago, Ill. He will supervise the Chicago, St. Louis, Minneapolis and Kansas City districts.

C. G. BUNNELL, purchasing agent of the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., in addition to his regular duties will now be responsible for the proper coordination of buying and buying procedure between all plants of the Westinghouse group.

RALPH M. HOFFMAN, for eight years manager of the Seattle office of the Pacific Division of Link-Belt Co., has been appointed vice-president and sales manager of that division with headquarters at San Francisco. He succeeds HAROLD H. CLARK, who retired on June 1. After graduating from the University of Minnesota in 1911, Mr. Hoffman jointed the Meese & Gottfried Co.,

RALPH M. HOFFMAN

Seattle, and when that company merged with the Pacific Division of Link-Belt Co., he was made manager of the Seattle office.

JAMES W. HOOK, president of the Geometric Tool Co., New Haven, Conn., was recently appointed to membership on the President's Emergency Committee for Employment with the special assignment of industrial coordination in New England.

WILSON P. HUNT, president, Moline Tool Co., Moline, Ill., has been elected chairman of the executive committee of the Tri-City section of the A.S.M.E.

ELLSWORTH L. MILLS, sales manager of the Bastian-Blessing Co., Chicago, has been elected a vice-president and will continue in charge of sales. Mr. Mills entered the welding field after

ELLSWORTH L. MILLS

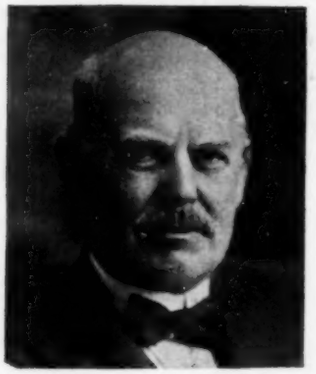
graduation from Cooper Union Institute, and as president of the Gas Products Association did much to promote better marketing methods among the competitive companies.

R. C. ROLFING, formerly vice-president and general works manager of the Hart-Parr Co., Charles City, Iowa, has been made general works manager of the Grigsby-Grunow Co., Chicago, succeeding ALBERT WEILAND, resigned. Mr. Rolfing had been in charge of engineering, purchasing and traffic for the Hart-Parr Co.

DAVID E. ROSS was elected president of the Ross Gear & Tool Co., Lafayette, Ind., to succeed EDWARD A. ROSS, who died in London, England, on July 9.

OBITUARIES

DR. EDWARD GOODRICH ACHESON, 75, discoverer of carborundum, oildag and artificial graphite, died July 7 at New York. Born March 9, 1856, Mr. Acheson had only a meager schooling, but at his death he was considered one of America's foremost scientists and the



DR. EDWARD G. ACHESON

world's outstanding expert on electric furnaces. He was chairman of the Acheson Graphite Corporation, New York; Acheson Oildag Co., Port Huron, Mich.; Acheson Corporation and Goodrich Corporation, of Jersey City, and others.

EDWIN H. AHARA, who retired several years ago as general superintendent of the Dodge Manufacturing Corporation, Mishawaka, Ind., died suddenly in London, Eng., while on a European tour sponsored for A.S.M.E. members by the Verein Deutches Ingeneurs.

CHARLES S. BRANTINGHAM, 69, president of the Emerson-Brantingham Corporation, Rockford, Ill., died July 3.

CHARLES D. FLEMING, 57, senior vice-president of the Cleveland Tractor Co., Cleveland, died July 1. Since 1920, Mr. Fleming had been an executive of of the tractor concern, coming from the Studebaker Corporation, South Bend, Ind., where he was assistant treasurer.

JOSHUA A. HATFIELD, 68, president and director, American Bridge Co., New York, subsidiary of the United States Steel Corporation, died July 4. He also was president and director of the American Improvement Co., the A. & P. Roberts Co., and the New Jersey Steel & Iron Co.

CHARLES H. JOCKMUS, 70, proprietor of the Ansonia (Conn.) Mfg. Co., makers of machine-screw products and electrical devices, died June 29.

GEORGE A. NEWMAN, 64, secretary of the Syracuse Chilled Plow Co., Syracuse, N. Y., and identified with the company for more than 30 years, died recently. He was a former secretary of the Syracuse Manufacturers' Association.

HARRY J. PARKE, for many years purchasing agent of the Gisholt Machine Co., Madison, Wis., died July 6.